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ABSTRACT

This document was developed to (1) help clarify the various concepts of retention and attrition within a unifying conceptual framework, (2) synthesize the research on retention and attrition, and (3) examine the implications of the research for postsecondary administrators and researchers. Retention and attrition research pertains to both the percentages of students who complete programs and the reasons for completion or attrition. Practical considerations concerning attrition and retention that administrators should consider are briefly addressed. After clarifying terms, (including persister, stopout, dropout, retention, and attrition), that appear to affect attrition and retention are described, and activities and strategies that may help reduce attrition rates are recommended. Theoretical and empirical literature is reviewed, as are attempts to classify retention. A new structure for classifying retention is proposed, and indicators and measures for attrition and retention are described. The difficulties of interpreting students' self-reported reasons for leaving school are also addressed. An extensive bibliography is included. (SW)

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Retention and Attrition: Evidence for Action and Research

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U.S. DEPARTMENT OF HEALTH,
EDUCATION & WELFARE
NATIONAL INSTITUTE OF
EDUCATION

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Preface

This document was developed (1) to help clarify the various concepts of retention and attrition within a unifying conceptual framework, (2) to synthesize the research on retention and attrition, and (3) to examine the implications of the research for postsecondary administrators and researchers. Retention and attrition research pertains to both the percentages of students who complete programs and the reasons for completion or attrition.

While the advisory committee for this project realized that faculty, legislative staffs, and students could all use the information presented in this document for decisionmaking, they concluded that this particular report should especially address the information needs of institutional and state-level administrators. Furthermore, they felt that the information needs of legislative staffs were similar to those of state-level administrators, since both are concerned with such issues as survival of institutions, duplication of programs, contact with the general public, implementation of the handicap regulations, public-service programs, and urban extension efforts. Hence, this document also addresses the needs of legislative staffs. Researchers are another major audience for this document.

Most of the literature on retention and attrition has not focused on the practical use of retention and attrition data, and the literature that has discussed practical use has generally not differentiated among types of decisionmakers. Therefore, the differentiations in this report are based largely on intuition and on comments from field reviewers who represent different decisionmaking roles and perspectives.

We hope that comments from readers will allow a more definitive version to be developed later.

This document is a natural outgrowth of the previous outcomes work at NCHEMS, which began almost a decade ago with a conference cosponsored by the American Council on Education and the Berkeley Center for Research and Development in Higher Education. That conference explored the issues related to identifying and measuring the outputs of higher education. NCHEMS then began developmental work in the area of outcomes by focusing on (1) the development of conceptual frameworks and definitions that would help administrators and others to better understand postsecondary-education outcomes and to more effectively identify and communicate about them and (2) to develop effective measures and indicators that can be used to provide evidence about the amount of outcome attainment for planning, accountability, and resource-allocation purposes. The NCHEMS *Outcomes Structure* resulted from the first focus and the NCHEMS *Outcomes Measures and Procedures Manual* from the second. In this document, we are focusing on specific types of outcomes in terms of both structuring and measurement.

In addition to reviewing the literature, we relied for input and critique on a six-member task force and other members of the NCHEMS staff to develop a field review version of the document that was completed and distributed in October of 1979 to 32 researchers, educators, and administrators in the field. Helpful comments and suggestions were received from thirty of the field reviewers. The document was then revised into its current form.

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Introduction

Student *attrition* and *retention* or *persistence* have long been familiar terms in higher education. But until recently, most administrators have been content to acknowledge that the phenomena exist and to accept them. Elite institutions have tended to assume that attrition is a consequence of maintaining the competitive academic conditions upon which their reputation depends. For very different reasons, colleges with open-door policies have come to accept attrition as an inevitable consequence of their admission policy. In most cases, retention rates have not been a concern unless drastic attrition occurred in a particular department or program, thus signaling that some type of problem existed.

Today, however, there is an increased awareness of the costs of attrition, both to students and to institutions. Students who drop out have wasted time, energy, and money; furthermore, the negative college experience may discourage them from trying again elsewhere. (Of course, for some students dropping out is a desirable and needed action, especially if they achieved their intended ends during the time they were enrolled.) From the institution's perspective, improving retention—reducing attrition—is one way to combat declining enrollments and the accompanying decreases in funding that now threaten so many colleges and universities. In addition, improved retention and effective recruiting enhance one another. Recruiting that attracts students who will not be happy or successful at the institution will adversely affect retention. Conversely, students who drop out because they are unhappy with their experience or feel the institution misled them, or both, will communicate their dissatisfaction to others; this may hurt future recruiting.

Because of changes in the funding atmosphere and because of the effect of attrition on a school's enrollment, researchers in education and the social sciences are studying the characteristics of attrition to determine the extent to which it can be controlled. In support of these efforts, the National Center for Higher Education Management Systems (NCHEMS) is devoting considerable attention to attrition and retention studies. The Center, in conjunction with the American College Testing Program, has surveyed a group of public and private four-year colleges to determine what institutional programs, activities, and policies work in student retention, and will shortly publish the findings in a monograph (Beal and Noel, forthcoming). Recently, the second edition of a manual for conducting attrition studies was published (Patrick, Myers, and Van Dusen 1979), and a Student Outcomes Information Service (SOIS) that includes separate attrition questionnaires for two- and four-year colleges was developed in cooperation with the College Entance Examination Board.

This document is the most recent NCHEMS effort in the area of attrition and retention; it examines these phenomena from the perspectives of both the administrator and the researcher. The monograph consists of two distinct parts, either of which can be used separately, though most readers will find both parts informative. Part I is a relatively brief treatment of the more practical considerations of attrition and retention. It is intended primarily for college administrators, including admission officers, deans, department heads, and public-relations directors. Part I clarifies terminology, describes factors that appear to affect attrition and retention, and recommends activities and strategies that may help reduce attrition rates. Part II will interest institutional researchers and others of theoretical orientation. It reviews the theoretical and empirical literature, reports on attempts to classify retention, proposes a new "structure" for classifying retention, and describes indicators and measures for attrition and retention. Both parts address the difficulties of interpreting students' self-reported reasons for leaving school. (Subheadings in part I sometimes are followed by page number references to more in-depth counterpart discussions in part II, to assist readers in using both sections of the book.)

Is Retention Good and Attrition Bad?

To assume that *retention* equates with success and *attrition* with failure poses hazards for any attrition study. Today, when colleges and universities struggle to maintain enrollments and funding levels, it is no surprise to find that this misconception persists. But for any attrition or retention study to be worthwhile, this dichotomous notion should be replaced with a more objective understanding of what enrollment, graduation, and other kinds of statistics really indicate, along with a commitment to develop programs that can help students reach the best decision about leaving or staying in school.

Another fallacy imbedded in some attrition and retention studies is an unrealistic expectation for retention. The epitome of retention perhaps, is the case of Edward Levi, who began as a kindergartner at the University of Chicago Laboratory School, progressed there through high school, went on to complete his bachelor's and law degrees on the same campus, and eventually became the University's president. But Edward Levi's career notwithstanding, dropping out of college does not necessarily impede or preclude high achievement. William Faulkner dropped out of the University of Mississippi at the end of his freshman year; John Steinbeck attended Stanford University only briefly; Eugene O'Neill never completed the degree requirements at Yale; and Ernest Hemingway never attended college at all. Yet each won a Nobel prize for literature.

The discussions that follow in this book describe ways that campus officials and others can gather, interpret, and use information about attrition and retention. The authors believe, however, that attrition and retention can be influenced meaningfully only if the notion is rejected that retention measures success and attrition signals failure. The primary aim of retention efforts should not be to help the institution achieve numeric goals for enrollment, degrees granted, and such, although that is also a consideration. Rather, the aim should be to help students resolve their problems in ways that serve their best interests as well as those of society and the institution they chose to attend.

State of the Art

At one time *attrition* and *dropping out* were regarded as synonymous. The heightened interest in attrition and retention has expanded the terminology, enabling researchers to distinguish types of student-dropout behavior and attendant motivation. Terms such as *attainer*, *stopout*, and *persister* are now part of their vocabulary. (For definitions of these terms, see pages 9-10.)

A common terminology has evolved and the number of studies has increased, but research in this field still possesses some weaknesses. For example, most attrition and retention research constitutes descriptive studies about individual schools from which it is dangerous to generalize. In addition, few studies have what Kerlinger (1973) calls the construct validity of research that is based on some theory or aimed at testing a hypothesis. Perhaps the most serious deficiency in the state of the art, however, is the absence of an organized, comprehensive synthesis of research results. Part II addresses this deficiency.

A Synthesis of Research

Part II groups attrition and retention studies according to whether they focus on (1) characteristics of the students, (2) characteristics of the institution, (3) the match between characteristics of the school and the student, or (4) forces external to the institution. Among the many student characteristics studies have been academic aptitude (IQ), socioeconomic status, ethnicity, age, study habits, hometown, and personality types; institutional characteristics include size, image, geographic location, mission, funding status, and religious affiliation. Studies from the first two categories have given indications that: rural students are more likely to drop out of college than are students from urban areas (Astin 1975c); personality characteristics, such as autonomy and the ability to deal with uncertainty, can correlate positively (D. Smith 1976) or negatively (Brawer 1973) with dropout behavior; no significant correlation exists between gender and the tendency to drop out of college; and use of counseling services, living on campus, and being employed part-time on campus correlate positively with persistence (Astin 1975c; Noel 1976; Frank and Kirk 1975; Alfert 1966; Bolyard and Martin 1973; Nasatir 1969; Chickering 1974; Everett 1979).

Among researchers in this area, Cope and Hannah (1975) are perhaps most emphatic about the advantages of matching characteristics of institutions and students. They contend that discrepancies between the two lead to attrition and that scrutinizing in isolation either set of characteristics for evidence relating to the phenomenon is meaningless. Among those who agree are Pervin and Rubin (1967), Chickering (1969), Nasatir (1969), and Pantages and Creedon (1978).

Classification

In the past, attempts to classify attrition and retention have used distinctions such as (1) voluntary and involuntary reasons for leaving school, (2) time of year a student drops out, and (3) the time and place a student graduates. The authors suggest another approach, using the NCHEMS Outcomes Structure and developing a detailed substructure that can be inserted into and used with that stucture. The NCHEMS Outcomes Structure is a system for organizing outcomes information for purposes of classification, analysis, and decisionmaking (Lenning 1977; Lenning, Lee, Micek, and Service 1977). It is based on three dimensions—audience, type of outcome, and time; characteristics of attrition and retention are grouped accordingly. More will be said about this structure later.

Measurement

In addition to counting the number of degrees earned, useful measurements of attrition and retention can be obtained by computing the time to earn a degree, both for individuals and an entering class as a whole; calculating the percentages of entering students who complete particular courses each term; calculating the percentages of particular student groups such as adults who return to school; and using longitudinal studies to follow students who leave. In the search for indicators of the presence of retention and attrition and of causes for persisting and dropping out, many factors have been found that correlate with these phenomena. However, indicators based on student-reported information or reasons must be used with caution. Research results suggest that students frequently are either unwilling or unable to report accurately their reasons for dropping out. Some studies have found considerable discrepancies between reasons cited on questionnaires or given orally by students and interpretations of experienced college counselors or other personnel in exit interviews (Demos 1968; Demitroff 1974). This and other supporting research does not preclude using students' reasons in studying attrition and retention. It does suggest, however, the need to use the information with caution.

Conclusion

Probably the subject of retention and attrition will always defy exhaustive analysis, and certainly at this point the state of the art needs refinement. Nonetheless, from the point of view of theory and application technology, the authors are convinced that most institutions can now undertake analyses of student attrition and retention that will produce information useful in meeting student needs and influencing enrollment. The study of these phenomena promises rewards that are worth the effort.

PART I

Practical Considerations Regarding Retention and Attrition

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1

Important Concepts for Retention and Attrition

A number of terms pertaining to students who persist or leave are discussed below. Emphasis is first placed on defining terms such as *persister, stopout, dropout, retention,* and *attrition.* The discussion then shifts to the more common ways of measuring retention and attrition.

Terminology (pp. 38-41)

With respect to retention or attrition, a college or university may classify students as persisters, stopouts, or dropouts. Any study of retention or attrition should take account of these categories, which are commonly defined as follows.

Persister. One who continues enrollment at the same institution without interruption for the period of study (which could refer to freshman or sophomore persistence or to persistence until graduation). Graduation for a full-time persister is usually timely—that is, two or three years after matriculation in a community college and four or five years after matriculation as a freshman in a four-year institution. Persisters are said to achieve *on-time graduation.*

Stopout. One who leaves the institution for a period of time but returns to the same institution for additional study. Graduation is usually assumed to be the goal of the stopout, but it will occur *sometime* rather than *on time.* Some apply a volitional dimension to stopouts; they separate those who leave the institution voluntarily from those who leave involuntarily. The dynamics involved in these terms are complex, and as a result systematic studies of the distinctions between voluntary and involuntary stopouts may be helpful to many institutions. Stopouts are said to achieve *late graduation.*

Dropout. One who leaves the institution and does not return for additional study at any time, or at the time of the study. (*Course and term completion* gives additional detail to the dropout category by specifying when a student drops out; such information has been particularly useful to community colleges.) Researchers should note that at the particular time a study is conducted, students may be classified as dropouts, while at a later date they may be considered stopouts if they resume studies at the institution.

As implied previously, the foregoing definitions describe students with respect to the college or university in which they initially matriculate. In this context a word should be said about transfer students, in order to clarify the terminology. From the perspective of the institution the student transfers from, the student is usually considered a dropout. (Those in community colleges may find this classification inappropriate in the case of students who take academic courses chiefly creditable toward a bachelor's degree and transfer to a four-year institution without actually graduating with an associate degree.) From the perspective of the institution the student transfers to and graduates from, the student is a persister. Lastly, from the perspective of the researcher who focuses on the transfer student irrespective of the institution, the student is a persister if there is no interruption of full-time or part-time studies; if there is an interruption, the student is considered a stopout.

Attainer is commonly used to define a student who drops out prior to graduation, but after attaining a personal goal such as a limited course of study, skill acquisition, or employment. In contrast to persisters, stopouts, and dropouts, attainers are defined not with respect to the college or university, but with respect to their own personal goals. The term *attainer* is sometimes used by researchers who are investigating student motivations and enrollment patterns.

Finally, there is a need to define the terms *retention* and *attrition.* Retention may be defined as that which occurs when students complete, continue, or resume their studies. Attrition occurs when students are no longer enrolled in a college or university.

Three Ways of Measuring Retention and Attrition

Only recently has much recognition been given to the fact that program completion is only one type of retention. Graduation and two other types are discussed below. Knowledge about the other two can be helpful in interpreting graduation rates. Furthermore, the other two types of retention and attrition rates are important in and of themselves.

GRADUATION RATES

The most common measure of retention and attrition is graduation. Usually the statistics are obtained for those students who have graduated from their original institution of entry within the time frame for which the institution's programs were designed. Table 1 presents data from a recent study that suggests the average graduation rate for two-year institutions, three years after students commence studies, is between 40 and 65 percent. The average rate for four-year institutions five years after students first matriculate is between 50 and 65 percent. This finding is basically consistent with research spanning the past 40 years.

The graduation figures change when a "sometime" definition is applied. Table 2 presents data compiled by Cope and Hannah (1975) from a composite of studies focusing on bachelor's degree recipients. The table shows the percentages of students who stop out of their first college, but who later enroll at either their original institution or another, and continue on to graduation.

TABLE 1

RETENTION AND GRADUATION BY TYPE OF INSTITUTION, NUMBER OF INSTITUTIONS REPORTING AND PERCENTAGE OF STUDENTS WHO ENTERED AS FRESHMEN

	Retention After One Year					
	1975-76		1976-77		1977-78	
Institution	**N**	**%**	**N**	**%**	**N**	**%**
2-Year Public	74	55	82	55	92	53
2-Year Private	27	63	29	64	30	63
Nonsectarian	12	63	12	62	12	64
Religious	15	61	17	65	18	62
4-Year Public	99	68	103	67	104	66
4-Year Private	207	71	222	71	227	71
Nonsectarian	66	73	72	73	76	74
Religious	141	71	150	70	151	68

	Retention After Two Years				Graduation			
	1975-77		1976-78		3 Years		5 Years	
Institution	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
2-Year Public					188	41		
2-Year Private					46	61		
Nonsectarian					18	63		
Religious					28	60		
4-Year Public	85	56	78	55			135	53
4-Year Private	176	57	178	57			306	60
Nonsectarian	52	63	55	63			105	64
Religious	124	55	123	54			201	58

NOTE: Reprinted from Beal and Noel (1979)

TABLE 2

EVENTUAL RETURN TO COLLEGE AND GRADUATION PERCENTAGES OF STUDENTS WHO WITHDRAW FROM THEIR COLLEGE OF FIRST MATRICULATION

Type of Institution at which Students Matriculated and from which They Withdrew	Percentage of Students Returning to College	Percentage of Students Eventually Earning Baccalaureate Degrees
Selective Private Universities	90-95	80-85
Selective Public Universities	80-85	70-75
Typical State Universities	60-70	50-60
State Colleges	40-50	30-40
Junior and Community Colleges	20-30	10-20

NOTE: These data were compiled from follow-up studies reported by Astin (1972a; 1975a), Bayer, Royer, and Webb (1973), Cope (1969), Hannah (1971), and Pervin, Reik, and Dalrymple (1966).
NOTE: Figures taken from Cope and Hannah (1975, p. 61).

A wide variation exists, depending upon the type of institution attended.

In brief, of an original entering freshman class at a four-year-college, up to 50 percent will still be present four years later, 35 to 40 percent will have graduated at the end of four years, and 20 to 30 percent more will graduate eventually. Percentages of those in community colleges who *eventually* earn a two-year college degree were not available, only those in community colleges who eventually earn a bachelor's degree.

For a given institution, tracking the retention and the graduation figures both for four years and for more than four years is important in addressing the problem adequately. When changes of a few percentage points can have major budget and program implications, an institution should try to regularize statistical analysis of the progress of its students. Of critical importance, of course, are defining the terms carefully and clearly and understanding what the subsequent figures represent.

COURSE COMPLETION

Little research exists that describes retention in terms of course completion (such as English 101). The studies that have been done were limited largely to community colleges, some of which define the term *attrition* as failure to complete all or specific courses within a given term. In these studies, improvement in the incidence of course completion, particularly in the case of high-risk students, is a measure of program success. (As Newlon and Gaither [in press] have demonstrated with their data, these percentages are likely to vary by program.) The statistics that accompany these studies represent local data. Unfortunately, national data are not available on course completion. This void is regrettable, since course-completion rates can impact institutional resources, policies on refunds, grading, and definitions of normal progress much more strongly than do graduation rates. Nevertheless, until research is directed to the matter on a national basis, institutions will depend on local data collection and analysis.

GOAL ATTAINMENT

Difficult as it is to locate comparative data on course completion, there are even more problems associated with the retention measure of goal attainment. Although recent research acknowledges goal attainment as an important factor in retention and attrition, no known research has been done on it. Part II of this document refers to some of the difficulties in assessing the role of goal attainment in retention and attrition. The problems include adequately determining entering goals of students and adequately ascertaining goal fulfillment. Even specific goals at the time of matriculation can change through the course of one academic term. Sometimes, the attainment of ancillary goals makes further study unneeded or unwanted, In any case, students will comment and act on the attainment of their goals regardless of how institutions and researchers label them.

2

Factors Relating to Retention and Attrition

Although research has not provided any solutions to the complex problem of attrition, studies have identified some basic characteristics that appear to be linked with attrition and retention. The following outline describes briefly many of those characteristics, categorized here as relating to students, institutions, the interactions between the two, or external forces. Within each subsection of the outline, the page numbers refer to the discussion of that factor in part II of this document.

Student Characteristics

ACADEMIC FACTORS

Academic factors represent the strongest predictors of retention, but the correlation may be no more than .50. The main factors predicting retention may be the level of students' previous academic attainments, and their education aspirations.

1. *High-school GPA and class rank.* Both correlate positively to retention (pp. 54-56, 58-59).
2. *Academic aptitude.* Most studies show a significant, positive relationship between persistence and entrance-examination scores. However, even students

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who drop out typically have scores that predict success in college (pp. 48, 54-59, 66).

3. *Poor study habits.* Dropouts describe their study habits as poor more often than do persisters and tend to study less than persisters (pp. 54, 56, 87-88).
4. *First-term grades.* Although the majority of dropouts have satisfactory grades, they tend to have lower grades than persisters (pp. 56, 87-91).
5. *Academic rating of high schools.* The students' rating of the academic quality of their high school relates positively to persistence in college (p. 55).

DEMOGRAPHIC FACTORS

Some demographic factors also have a relationship to attrition. However, the relationship to attrition is not clear for a number of these and other factors.

1. *Age.* Some studies indicate that students above the average age tend to more readily drop out or stop out than students from 18 to 22 years of age. Enough conflicting evidence exists, however, to indicate that age is *not* a primary factor in attrition (pp. 49, 54, 57).
2. *Sex.* Men and women give different reasons for dropping out, and some early studies indicate a greater attrition rate for women, especially women married or older than conventional college age. However, sex is not significantly related as a primary variable to retention or attrition (pp. 49, 54, 57-59, 64, 88-89).
3. *Socioeconomic status.* Although socioeconomic status is commonly thought to be related to retention and attrition, the results of studies are mixed. The best conclusion may be that students of distinctly disadvantaged status are more prone to attrition but the operating variables may be level of familial aspiration, educational level of parents, personal educational aspirations, and involvement with the college (pp. 49, 54-55, 66).
4. *Ethnicity.* Students of Spanish-speaking background (both Chicanos and Puerto Ricans) show a lower probability of graduating than other ethnic groups. Blacks and Native Americans also were found to have lower probabilities of graduating than whites. Once high-school ranks and scholastic aptitude were controlled, retention for Native Americans and whites were similar, and the adjusted retention rates for blacks were significantly higher than for whites on two of the four measures of retention being examined (Astin 1971a; 1973b; 1975c). Such equalization after ability was controlled was not found for students from Spanish-speaking backgrounds (pp. 54-55, 58-59, 66, 89).
5. *Hometown location and size of high school.* Results of studies are mixed. These variables may interact with those of size of college and sex, but more research is necessary to show definite relationships to persistence. The research indicates higher retention rates for students from private schools and larger high schools in large communities (pp. 49, 54-55, 64).

ASPIRATIONS AND MOTIVATION

In their recent review of the literature, Pantages and Creedon (1978) conclude that research has "failed to establish relationships among levels of motivation, commitment to the college, the strength and content of educational goals, and attrition" (p. 71). However, a number of research reports (pp. 55-57, 60) do differ with Pantages and Creedon's conclusion and identify several variables that influence retention or attrition.

1. *Level of degree aspiration.* Students who aspire to a doctorate or a professional degree are more likely to persist (pp. 50, 54-55, 66).
2. *Transfer plans.* Intention to transfer or drop out at time of initial entrance is positively related to attrition (pp. 50, 54).
3. *Commitment.* Commitment to the college is positively related to persistence; when student-institution fit is poor, commitment becomes necessary for persistence (pp. 48, 53-55, 57, 60, 62, 64-66, 73, 89-91, 101)
4. *Peer-group influence.* The influence of the peer group is positively related to persistence; the quality of the relationship and the educational values endorsed by the peer group are most important (pp. 46-48, 50, 52-56, 61, 87-88, 96).
5. *Vocational and occupational goals.* The specificity of a student's vocational and occupational goals may be related to persistence only in technological or vocational programs. In most cases the incidence of major changes offsets the influence of original goals as related to persistence. Again, the matter of student-institution fit is important and will be discussed in a later section (pp. 50, 55, 60, 64, 87-88, 101).
6. *Satisfaction vs. dissatisfaction.* An assumption has prevailed that students who are satisfied with a college will stay and those who are dissatisfied will leave. However, this is not necessarily true. Persistence may be related more to willingness or ability to endure dissatisfaction than to the dissatisfaction itself (pp. 51-53, 56-57, 73, 87-90, 97). On the other hand, if a student is satisfied, that satisfaction probably contributes to retention.

FINANCIAL FACTORS

Lack of finances is often listed as a major reason why students drop out. Research has identified the following as variables operative in relating finances to retention and attrition.

1. *Student concern about finances.* This is the most important variable related to finances. Even the student with apparently adequate financial support might perceive a problem and withdraw to solve it. Conversely, some students can work near-miracles with limited finances and thus persist in college (pp. 49, 54, 57, 60, 65, 73, 87-91).

2. *Financial aid.* The amount and type of financial aid is related to persistence. Scholarships and grants, particularly those of major proportions, seem to increase persistence; loans, particularly those of large amounts, seem to contribute to attrition. Part-time employment, particularly if on-campus, seems to improve persistence. According to Astin (1975b; 1975c), the type of aid can influence persistence: loans work negatively when combined with grants, work study is best with no grants, and any type of aid is best if not combined with other forms. The last finding of Astin may be saying more about the amount of student financial need than about the type of award (pp. 49, 63, 92).
3. *Employment.* Having a campus job of less than 25 hours per week increases persistence. Working off campus part-time also increases persistence, unless the job is held for a long period of time and is closely related to a career opportunity. Full-time employment correlates negatively to persistence. Contrary to a common perception, part-time work correlates positively to persistence even during the freshman year. According to Astin (1975b; 1975c) the degree of satisfaction with employment has little effect on persistence (pp. 49, 60, 63, 88, 90, 97).

Institutional Characteristics

According to Pantages and Creedon (1978), only in the last 15 years has research focused on the college environment and its influence on retention and attrition. The college environment is now considered a major factor in the retention or attrition of students. Institutional influences on retention can be divided into three categories: objective environment, the environment of student involvement, and the policies and procedures of the institution.

OBJECTIVE ENVIRONMENT

The objective environment refers here to the institution without the component of student involvement. Environment in this sense includes image, cost, size and kind of institution, services, and residential conditions.

1. *Image.* On the whole, the more prestigious the college, the less the attrition, probably because the perceived benefits for a student outweigh the dissatisfactions. The selectivity of a college is a part of its image; highly selective institutions tend to have less attrition than other institutions (pp. 40, 55, 59, 61, 63).
2. *Public vs. private.* Students attending private schools have greater persistence than those attending public schools. Students attending four-year public colleges show the best retention after the four-year private colleges. Two-year public schools have higher attrition rates than any type of school,

public or private. The students attending two-year private schools, who may have a different set of educational goals, are more dropout prone than other students. According to Astin (1975c) the advantages of the four-year colleges lie in greater resources in residence halls, financial aid, work opportunities, and academic prestige (pp. 11, 40, 63).

3. *Religious affiliation.* Students attending four-year religiously affiliated institutions have greater persistence than students at other four-year schools. Roman Catholic schools show higher retention rates than Protestant schools (pp. 11, 52, 54, 62).
4. *Cost.* The costs of attending an institution correlate positively to retention; that is, high-cost schools show the best retention. However, other more important variables such as selectivity, prestige, and size also are significantly associated with cost (pp. 11, 40, 61, 63).
5. *Housing.* Students who live off campus are more likely to drop out than students who live on campus, although there are indications that living in rooms or apartments correlates positively to retention for men and negatively for women. The benefits of residence-hall living exist regardless of the required or voluntary nature of the housing policy. Living in fraternity or sorority houses shows an even stronger relationship to persistence than living in dormitories. Students who live at home their first year and then move into a dormitory show more persistence than those who stay at home. On the other hand, those who move back home after living the first year on campus show an increased dropout rate (pp. 52, 61, 96).
6. *Student services.* Relatively little research exists on the effects of student services on retention and attrition; most existing studies focus on counseling services. The results show, in most cases, that counseling services can increase persistence. At some two-year colleges, the upgrading of such services had marked effects on retention for experimental groups. Unfortunately, the research also shows that students are not inclined to use the counseling services that are available to them. Some studies suggest improving communication and publicity about available counseling services (pp. 48, 61-64, 92, 96-98).

   Academic advising is another service that can improve persistence. The distinction between advising and counseling is sometimes blurred, and the terms are sometimes combined. Again, those who use academic-advising assistance show greater persistence. The institutions that devise specific retention programs usually use academic advising as a key factor.

   Orientation programs are also considered important to a college interested in improving retention. Marked improvement in retention rates of high-risk students, as well as regular students, has been shown by some institutions that redesigned their orientation programs. These programs often extend beyond the traditional opening days of a school year and sometimes involve the parents of students. Learning-assistance centers offered by some schools have a positive impact on retention. The centers need not be remedial, although many are. Learning assistance can take the form of reading or study-skills improvement, writing workshops, or tutoring and special help sessions.

Research is lacking on the impact of other student services on retention, although a few references exist in the areas of career planning and placement, foreign-student advising, minority-student counseling, "early alert systems," use of students as peer counselors, and student activities (which are discussed in the next section).

7. *Mission and role of the college.* Research suggests that institutions with a clearly defined mission also have higher retention rates. These institutions seem best able to attract the kind of students who will fit in with the student and academic environments and persist to graduation. Both consistency of mission and accurate communication of the mission to prospective students and other constituents are important (pp. 62, 64, 97).

STUDENT INVOLVEMENT

According to Astin (1975c), the key factor in retention is student involvement in campus activities. He attributes the positive effects of part-time employment on the campus, of residential living, of student activities, and of other categories of involvement to the fact that the student is involved in the life of the institution and subsequently is more apt to persist there. Numerous other references, particularly those primary sources used for this paper, also refer to involvement as influencing student retention.

1. *Extracurricular activities.* Pantages and Creedon (1978) conclude that too little documentation exists to support the role of extracurricular activities in retention, but they do cite a number of studies that support the premise. Astin's work concentrated on participation in varsity sports and membership in Greek organizations (pp. 48, 61, 63, 65, 88, 92, 96).
2. *Close friends.* The literature supports the premise that students who establish close relationships with other persons show greater persistence in college. In one study, the conclusion was reached that the important factor was a caring atmosphere or specific individuals who cared about a student. Cope (1978) described one retention program specifically designed to assure that certain students had "significant others" integrated into their campus experience. Significant others may include faculty or staff members, as well as peers, who establish a meaningful relationship with the student (pp. 46-48, 51-53, 61-62, 96).
3. *Student-faculty relationships.* According to Pantages and Creedon (1978), "the quality of the relationship between a student and her or his professors is of crucial importance in determining satisfaction with the institution" (p. 79). A number of studies have shown that frequency of and satisfaction with student-faculty interaction was a contributing factor to retention.

About half of the persisting students indicated dissatisfaction with faculty relationships, while two-thirds of the dropouts were dissatisfied. Part of the value of the academic-advising programs initiated by some colleges is apparently faculty-student contact that takes place when students relate to professors out of the classroom. There are some indications that men, in particular, appreciate contact with the faculty outside of the classroom (pp. 46-48, 51-53, 57-58, 61-64, 96).

4. *Academic programs.* Astin (1975c) points out that retention increases with student involvement in honors programs, in foreign-study programs, in credit-by-examination, and in the earning of good grades. He postulates that "students who are involved in the academic life of the institution are more likely to expend the effort necessary to get good grades than are students who are not involved" (p. 100). Other ways that students can be involved include work-study jobs in academic departments, participation as tutors and peer counselors, participation with faculty in curriculum design and program review, appointment as research or instructional assistants, and so forth. Whatever the form of the involvement, persistence in the institution is likely to improve with increased involvement (pp. 64, 92, 97-98).

ADMINISTRATIVE POLICIES AND PROCEDURES

Research is lacking on the influence of administrative policies and procedures on student persistence. In one study, students were found to persist to a greater extent when policies did *not* impose punitive measures for early withdrawal. Our interpretation of literature suggests that procedures should not impede matriculation or reenrollment at an institution. Policies pertaining to the withdrawal procedure should enhance the opportunity for students to have personal contact with university staff, and more attention should be given to such contact before a student decides to withdraw. Pantages and Creedon (1978) indicate that humanizing the interactions between students and college staff would benefit both the institution and the student. They also suggest the same for policies that make stopping out easy and not penalized (pp. 42, 52-53, 62, 65-67, 90-92, 95-101).

Interactions (pp. 43-53, 65-67, 74-78)

The dominant theme in retention research today is that retention and attrition result from the interactions that take place between students and the institution. The term *fit* is used to describe the interaction for those who stay and *lack of fit* the interaction for those who leave. Fit can involve many things, but it does include moral and social integration, meaningful contact between the student and the faculty, development of relationships between students and those who care about them, and the responsiveness of the institution to the need students feel.

(Marketing the institution to prospective students clearly must involve much more than merely attracting them to come and enroll.) Integral to the fit is the degree of discrepancy between student expectations and opportunities for realization of those expectations. Such discrepancies may be considered variables or factors in and of themselves, as distinguished from the student and environmental factors of which they consist.

According to Pantages and Creedon (1978), "The degree to which the attitudes and values of the student correspond with those of the institution is also the degree to which the student is likely to persist at that institution" (p. 80). Cope (1978) states that "the research on integrating the individual with the academic and social milieu suggests that this is where programs for retention will be most successful" (p. 9). Astin (1975c) describes the difficulty of researching student institutional fit because of the complexity of combined variables related to both the institution and the student. In spite of such problems in exploring student-institution relationships, however, Astin's data do suggest that persistence is enhanced if students attend institutions where many of the students are similar to them on social background factors such as town size, religion, and race. Astin found no evidence that students persist better when attending colleges with students of similar ability. He challenges, in fact, the educational justification for selective admissions.

According to Cope (1978), social interaction with the faculty is related to retention, especially if the interaction focuses upon intellectual or course-related matters. Cope stresses the importance of enhancing the social, academic, and intellectual integration of students to improve retention.[1]

Clearly, institutions do differ, and not all students will be equally comfortable in any institutional environment. Pantages and Creedon (1978) note: "The extent to which the student can meet the demands of the college and derive satisfaction from doing so is the degree to which the student may be expected to persist at the college" (p. 94). The factors discussed here can enhance persistence or contribute to the dropout rationale, which eventually culminates in withdrawal from the institution.

External Forces and Variables (pp. 57, 84-85, 87-91)

Retention and attrition may also be affected by forces external to the university. Although these factors are beyond institutional control (as is also true of other previously mentioned factors), appropriate institutional responses may facilitate student decisions about staying or leaving. The following are examples:

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[1] A word of caution is necessary about institutional flexibility and responsiveness to student needs. In accommodating student needs, an institution should be careful not to compromise the quality of the education it provides. An institution should not try so hard to establish fit that students lose the challenge to learn. For example, Sanford (1967) indicated that some student-versus-institution discordance may be necessary for intellectual stimulation, learning, and development to occur. In addition, a school should recognize that students represent a multitude of needs and stages of growth, and that students change during the course of their study.

MILITARY DRAFT

During the sixties, a number of male students were enrolled, in part, to avoid the draft; retention and attrition statistics for those years should carry a footnote to account for this. The absence of the draft during recent years undoubtedly affects retention somewhat, as would reinstatement of the draft, being contemplated at the time this book goes to press.

ECONOMIC CYCLES

Macroeconomic factors may well affect enrollment patterns. Times of economic hardship may produce more students who pursue studies while unemployed. For students still supported by parents, however, a tightening of discretionary income sometimes has a direct negative impact on enrollment. An economic upswing, on the other hand, may attract students out of college into good jobs. It should also be noted that economic forces impact various programs and institutions differently (for example, liberal arts impacts versus engineering program impacts), and there is usually a lag of six months or more between the occurrence of an economic condition in a community and society and its translation into impacts on enrollment and retention.

SOCIAL FORCES

Fads and attitudinal trends keep changing throughout our society, sometimes being regional in scope and sometimes being national. In addition, every community is subject to temporal forces that can impact enrollment in nearby colleges and universities. Commuter and part-time students may increase or decrease, depending upon local issues and problems. In one college, the enrollment of part-time students was noticed to drop off markedly upon announcement of civil service exam results. A belief that the value of a college degree in finding a job is decreasing influences some students to drop out.

3

Interpreting Students' Reasons for Dropping Out

Any attempt to learn directly from students their reasons for leaving an institution must recognize the problems inherent in the self-report process. First, students may not really understand their motivations for leaving; consequently, they may cite reasons that are superficial. Often a decision results from a combination of reasons, no one of which may have made the difference between staying and leaving. Students who feel the need to protect their self-image may provide explanations that they consider socially acceptable or that hide personal problems. Even inadequate financial resources, an explanation given frequently, is often not the real or most important reason. Although there are some hazards in interpreting student-reported reasons for dropping out, an institution can learn a great deal from them. Whether or not the students' perceptions are accurate, they represent variables in the development of the dropout rationale that also may be operating for persisting students who, with a combination of factors, may become dropouts. Researchers have identified many reasons; lists cite as many as 65 (Albino 1973), although most limit the number to a dozen or fewer. Several researchers consolidate reasons into categories or basic dimensions of reasons for dropping out. Despite these attempts at pulling together basic student reasons for dropping out, many different categories with considerable overlap emerge. However, the categories and reasons do not show the interrelatedness that usually applies to different reasons and different categories.

Developing a dropout rationale is a complex process that often takes several months to evolve into a decision. Attempting to isolate single reasons as primary to the decision is probably less productive than devising means of helping students with the decision process. In most cases, students make decisions with no contact or assistance from college personnel. It is worthwhile, therefore, for those personnel to be aware of the types of reasons students give for dropping out and to identify reasons peculiar to the local situation.

The basic categories of reasons reported by Pantages and Creedon (1978) are described below:

Academic Matters

This includes everything from grades to unavailability of a course of study. Although most students who drop out do not do so because of deficient grades, dissatisfaction with grades is nevertheless one of the major reasons cited by students for leaving. Other reasons include dissatisfaction with the curriculum, quality of instruction, course schedule, and so forth. Some students also cite the unavailability of a desired course of study (not always with accurate knowledge about course availability), poor study habits and skills, boredom, and dissatisfaction with academic requirements and regulations.

Financial Difficulties

Oddly enough, researchers have noted considerable discrepancy between the number of students who cite financial difficulties as a major reason for leaving and the number who indicate that they have applied for financial assistance. In some cases, students with financial assistance nonetheless drop out, citing reluctance to assume long-term loans or to further encumber their parents by accepting loans or gifts. In many cases, institutions award less aid than the documented need. In other cases, students do not feel that their documented need accurately represents their actual need. Some students stop out to accept jobs for the purpose of saving money for subsequent enrollment, while others encounter career opportunities that make it unnecessary or difficult to return to school. The fact that many people perceive that the rate of return on investment in a college education is down, and the fact that a degree no longer assures them of a good job (or good pay) may also be influencing such decisions.

As mentioned previously, the forms of financial assistance influence persistence differently. Some researchers even conclude that financing college is not a major problem in persistence (Cope 1978). Students have numerous options in choosing the cost of their education and in managing the resources available to them. Nevertheless, it is not surprising that financial difficulty is cited as a major reason for dropping out.

Motivational Problems and Personal Considerations

This category includes many reasons related to uncertainty about educational and vocational goals, lack of interest in studies, inability or unwillingness to study, the lack of parental support, and so forth. Students who drop out also cite many personal reasons, including marriage, emotional problems, maladjustment to college life, and wanting to get themselves "together."

Dissatisfaction with College

Students cite many areas of dissatisfaction to which they attribute their choice to drop out, including the size of the school, its social environment, the academic offerings, the housing accommodations, treatment by institutional personnel, institutional policies, and interactions with faculty members. Considerable overlap may exist between this category of items and others such as academic matters. In some cases, institutions may find that the list of dissatisfactions offers them considerable opportunity for improving student services. In other cases, the listed dissatisfactions refer to matters over which the institution has no real control.

Dissatisfaction per se is possibly not a key factor in student attrition. Iffert (U.S. Department of Health, Education, and Welfare 1957) found that persisters evidenced more dissatisfaction in some cases than did dropouts. The difference seemed to be the degree to which persisters were willing to endure the unsatisfactory situations. For these students, persisting at the institution had greater benefit in the long run than dropping out or transferring to another institution. However, it is important for an institution to be aware of major student dissatisfactions, to minimize those matters as factors in attrition. In addition to preventing some degree of attrition, institutional efforts may also improve the satisfaction and general well-being of students who would have persisted in any event.

4

Implications of What We Know about Retention and Attrition

Much is known about the retention and attrition of students in higher education. From the standpoint of the college administrator, the next primary question should be, "What can I do about it?" Despite both the multivaried factors that contribute to retention and attrition and the highly complex interrelationships among them, solutions may be less difficult to find than would first appear. The task is not to eliminate attrition, a task that is infeasible as well as undesirable. Instead, the task is to assist a relatively small percentage of students to persist in college. A shift of even a few percentage points in retention statistics could benefit individual students and have a major impact on the institution.

According to Pantages and Creedon (1978), "colleges must design and implement effective intervention programs if they hope to minimize the attrition potential of their students" (p. 94). As mentioned previously, the emphasis should be on prevention rather than on prediction. Noel (1978) states that

> [the] goal of increased student retention can best be realized if two essential conditions are met. First, a genuine concern about student retention and a commitment to develop and implement retention strategies must be visible at all levels of the institution—from the chief administrator to part-time support staff. The second essential condition is equally comprehensive: To be effective, a retention strategy must affect all points where students interact with the institution. [Pp. 87-88]

This section outlines recommendations for procedures and policies for increasing student retention. Based largely on reports of institutional experience, most of these recommendations are consistent with the research findings reported in the previous sections. For a deeper discussion of these recommendations and others, see the Beal and Noel report (in press) *What Works in Student Retention,* a joint study of NCHEMS and the American College Testing Program.

Steps and Procedures for Increasing Retention

According to Noel (1978), giving attention to student retention will force an institution to examine itself closely, even though it may not like what it sees. Change may be necessary. "The students will persist if the institution is delivering lively, substantive learning and growth experiences" (p. 98). Although institutions vary, there are steps and procedures for increasing retention that can apply to virtually every type of institution:

a. Establish an institutionwide retention steering committee
b. Determine the dropout rate
c. Conduct a dropout study to determine why students are leaving
d. Conduct an institutional self-study to determine where the institution is successful and where it needs improvement
e. Establish retention task committees within each of the units or departments to determine appropriate student-oriented action programs
f. Make concerted efforts to increase faculty and staff awareness of factors related to retaining students; encourage a campuswide attitude of serving students
g. Build a sound marketing approach into the recruiting program; recruit for retention
h. Develop a good orientation program for entering freshmen and transfer students
i. Build a student counseling and advising program from admissions through job placement
j. Provide a special career-planning program for students who are undecided about educational major or vocational choice
k. Provide a range of academic-support services for students with marginal academic credentials (every college has a bottom quarter of its entering freshman class)
l. Build a so-called early warning system to identify students who are likely to drop out
m. Set up a simple but sensitive exit-interview process
n. Institute a tangible reward system for good teaching and faculty advising

Other Action

In addition to the specific action areas mentioned in the Noel summary above, Cope and Hannah (1975), Astin (1975c), and Pantages and Creedon (1978) offer specific recommendations, many of which overlap. The following items represent a synthesis of the recommendations of these studies.

STUDENT-FACULTY INTERACTION

Additional opportunities should be generated for student-faculty interaction outside the classroom. This can be accomplished in many ways, including faculty involvement in orientation and advising, joint student-faculty committees, joint participation in programs and activities, joint student-faculty lounges, receptions in faculty homes, and so forth.

RESIDENTIAL CONDITIONS

Attention should be given to modifying residence halls to accommodate better the different interests of students, as well as providing opportunities for off-campus students to experience on-campus living, even for short periods of time.

ENVIRONMENTAL ASSESSMENT

Greater use should be made of college environmental-assessment devices, to identify those aspects of the environment that create student dissatisfaction and, in turn, increase the likelihood of dropping out. Likewise, student suggestions for change and improvement could be ascertained through such devices.

FINANCIAL-AID MODIFICATIONS

Institutions should attempt to modify distribution of financial aid to provide grants and scholarships to more students and to offer more on-campus work opportunities for students. Also, the use of students in paraprofessional capacities could be greatly expanded. Care should be exercised in the packaging of financial aid awards in order to avoid combinations that appear detrimental to persistence.

DROPOUT SURVEYS

Regular surveys of students who drop out should be conducted with ongoing analyses of responses. Students who persist should also be surveyed in a similar manner with comparative analyses made of the results.

INTERVENTION STRATEGIES

Programs should be devised to intervene at an early stage in the withdrawal process to maximize the opportunity of the institution to influence the student to stay, as well as to provide knowledgeable assistance to students in their decision-making activities.

EXTRACURRICULAR PROGRAMS

Increased efforts should be made to expand opportunities for student involvement in extracurricular activities. Such an emphasis may require institutional recognition that such involvement is important to the educational process as well as to persistence. New and innovative involvement opportunities should be devised beyond the traditional activity programs. Such new programs could well be related to the curriculum, for credit or noncredit, and could take place either on or off campus.

EVALUATION

Systematic evaluation should be applied to all of the institutional efforts; both the intrinsic worth of the effort and its impact on retention should be evaluated.

Policy Recommendations

The recommendations of Cope and Hannah (1975) primarily relate to institutional change involving policy decisions. Their recommendations are as follows:

- Colleges should make it easier to enter and exit in order to facilitate, if not encourage, stopping out.
- Colleges should move further away from the concept of the two-year or four-year degree and encourage intermittent and interruptible schooling. Requirements for continuous registration should be lessened.
- Institutions should clarify their values and purposes and better communicate these to prospective and entering students. Admissions procedures may need adjustment in accordance with the espoused values.
- Selective admission, based on test scores and grades, is often inappropriate; the admissions emphasis should change to include "whole person" indicators of accomplishment.
- Colleges should encourage the earning of external degrees and open universities to attract former students who would otherwise remain noncompleters.
- Local community citizens and older persons should be encouraged to make

use of institutional resources without complying with regular admissions procedures.

- More experimentation should be made with academic calendar options including Friday-Saturday colleges.
- Colleges should increase the awarding of credit for knowledge and experience and move toward competence and achievement-based degrees.
- Colleges should eliminate arbitrary year-of-study designations such as freshman, sophomore, junior, and senior, and use accumulated credits as indicators of progress toward degrees.
- Expanded independent study and off-campus experiential learning should be developed to encourage potential stopouts to remain with the college, although not enrolled in the traditional sense.
- External credit and noncredit options should be made available to dropouts.
- Colleges should allow credit for life experience, especially for those who previously started but did not earn a college degree.
- Colleges should recognize credits earned in the distant past rather than arbitrarily limiting credits to recent years.
- The tuition structure should be modified, if necessary, so as not to penalize the part-time student.
- Financial aid should be made more readily available to part-time students.
- The needs of transfer students should be addressed and services similar to those for freshmen should be offered, where appropriate, including financial aid and orientation programs.
- Policies should be revised to facilitate transfer of credit from former institutions without penalty to the student.

PART II

A Conceptual Synthesis of the Literature Concerning Student Retention and Related Measures and Indicators

41

5

Putting Retention and Attrition into Context: The Larger Picture

It became clear to postsecondary-education administrators during the early and mid-seventies that the pool of college students was going to decrease greatly because of declining birth rates after the mid-fifties. Because of continued price inflation and the limit to what efficiency and finance-acquisition steps can accomplish, much recent discussion has focused on ways to keep institutional enrollments from decreasing. Lenning (1978) discusses three ways for an institution to maintain enrollments: (1) obtain a larger proportion of the decreasing pool of traditional prospective students, (2) enroll more students from nontraditional population groups, and (3) increase retention. Undoubtedly, most institutions are attempting to improve on all three fronts. But, as indicated by Lenning, there are serious philosophical and practical problems with the first two strategies. Retention, however, is becoming an increasingly attractive strategy—if we only knew how to do it. On the other hand, it is important to also consider what is best for each student; and some who are dropping out will find it to their advantage, as discussed in the introduction.

The fact that the percentage of students obtaining a baccalaureate degree in four years has remained steady at 40 percent from 1930 until the 1970s (Cope and Hannah 1975) suggests the difficulty of increasing student-retention rates. However, attrition rates vary across institutions that are similar in almost every other respect. For example, Jex and Merrill (1967) report that only 20 percent of the entering students at the University of Utah graduated within 4 years, although 60 percent graduated within 10 years of entrance. The difference between the

4-year and 10-year figures suggests the potential for affecting attrition. Drake University, Reed College, Central Washington University, and the University of Maryland were each able to increase their graduation rates from 7 to 16 percent through special retention efforts (Middleton 1978).

Part II of this document addresses two specific needs related to improving retention. The first concerns the synthesis of different definitions of retention and attrition and the various research results. The second concerns synthesis of what the literature has to say about the usefulness of the research. Usefulness is based on such factors as validity, reliability, practicality, ease of application to decision-making, openness to misinterpretation and abuse, and efficiency or cost feasibility.

Definitions of Retention and Attrition

Until this decade, the student-survival terminology has been negative in its focus. Increasingly during the seventies, educators have spoken in terms of retention rather than attrition. Although many people continue to think in terms of prevention, the terminology used here will be positive. A number of different definitions of retention and attrition have been formulated and advocated by different groups of educators. In this section, these definitions have been grouped into four major categories. An overall definition that would apply to all four categories, and thus serve as a generic definition of retention is *success in achieving some goal or objective.* This is the converse of a definition for attrition used in a recent study conducted by the State University of New York (1979): the failure to achieve some goal or objective.

GRADUATING ON TIME

The percentage of students completing the baccalaureate degree in four years represents a traditional and commonly accepted definition of retenion—the percentage of entering students completing the program in the time for which the program was designed (for example, a one-year certificate program, a two-year associate-degree program, a four-year baccalaureate-degree program, a five-year baccalaureate-degree program, a three-year master's-degree program, and so forth). Variations of this definition include students who graduate in a different curricular program within or outside of the institution, but in the same amount of time designated for their original programs. The reverse, the percentage of entering students who do not complete the program in the time for which it was designed, is the counterpart definition of attrition. For example, the goal of increasing the retention rate from 50 to 60 percent is the same as reducing the attrition rate from 50 to 40 percent.

GRADUATING SOMETIME

The graduating-on-time definition of retention is inappropriate for large numbers of students at many institutions. A majority of large urban institutions, especially community colleges, have thousands of part-time students in degree and certificate programs who take much longer to graduate than traditional, full-time students.

In addition, a number of studies have focused on students at four-year institutions who drop out but return to the institution later to continue their studies (Ecklund 1964b; Jex and Merrill 1967; Bluhm and Couch 1972; Timmons 1977b). "Stopping out," as this behavior has come to be called, is quite common and can sometimes be helpful in improving chances of eventual graduation or a more meaningful educational career. More counselors are recognizing the value of stopping out, and some reports have suggested that increased numbers of full-time students are planning to stop out—for purposes such as travel, work, or exploring careers—prior to graduation. Clearly, there are varying reasons for stopping out; some are voluntary as just mentioned, while others are involuntary, such as sickness, death in the family, or the inability to adjust to the college or degree program.

For part-time students and stopouts, the retention rate may be defined as the percentage of students who eventually graduate from the institution in their original program at some time, no matter how long it takes. A broader definition would include those who complete their program in another institution as well as those who graduate from the same or another institution in a different program. Lightfield (1974) reports that an increasing number of community-college students are stopping out for one or more semesters and later returning to receive their degree. Bossen and Burnett (1970) found that approximately one-half of those who drop out will return to pursue a degree. Cope (1978), illustrating the need for the graduating-sometime definition, compared estimated on-time percentages to those graduating within 10 years at the same institution; he made comparisons for different types of institutions. The percentages for these two definitions are represented in table 3.

TABLE 3

DISTRIBUTION OF ON-TIME VS. SOMETIME GRADUATION PERCENTAGES

	Percentage Who Graduate[a]	
	In the Designated Time[b]	**Within 10 Years**
Selective Private Schools	80-90	90-95
Selective State Universities	30-45	50-70
Typical State Universities	15-25	30-45
Public Community Colleges	15-25	10-15[c]

a. Figures cited by Cope (1978, p. 4)

b. Percentage graduating in four years for the first three categories and in two years for public community colleges

c. Percentage who graduate from a four-year institution after transfer

TERM, YEAR, OR COURSE COMPLETION

Some community-college administrators have claimed that neither of the previous definitions are useful for their planning because so many of their students stop out and stop in at their leisure, change plans, or take courses at the institution for purposes other than earning a degree or certificate. These administrators believe that the practice of students enrolling for a course or term and then dropping out midterm may suggest a need for changes in institutional programs or course planning (especially if this type of attrition is prominent in particular programs and courses). A micro-level definition of retention refers to the number or percentage of students starting and completing a course or term. If they complete some courses but not others during a term, these data can also have meaningful implications. Johnston (1971) notes that about 17 percent of those students in community colleges who are enrolled at the beginning of a quarter can be expected to drop out before the end of the quarter. The percentage would be expected to vary by program, however, as it did at a university for Newlon and Gaither (in press).

This definition is also important with respect to time of dropout. Several indicate finding that a majority of students entering college for the first time who withdraw before graduation drop out during the freshman year. Thus, a common index of attrition at all types of colleges and universities is freshman-year attrition. Freshman-through-sophomore attrition is also useful information.

PERSONAL GOAL ATTAINMENT UNRELATED TO DEGREES

Dropping out in the middle of a program, term, or course may mean that the students have personal problems, difficulties with course work, or dissatisfaction with the course, program, or institution. Or dropping out may mean students have gained the knowledge or skills that they sought from the course or program.

With respect to community colleges, Hahn (1974) presents some of the perceived benefits of dropping out. Dropping out can be a positive experience for some, for example a student who gets a better job as a result of having taken a few courses.

A Unifying Concept of Retention and Attrition

These four general types of retention and attrition should not necessarily be considered as isolated from one another. Information about all four types can give a more informed view of the retention situation at a school than can any one index by itself. The NCHEMS Outcomes Structure can be useful in providing a broadened view of retention. By considering the four types of retention and attrition as *educational outcomes* and examining them in the context of the Outcomes Structure, it becomes possible to integrate all available, diverse information about retention in a single framework.

The NCHEMS Outcomes Structure is a framework designed for organizing and clarifying information about the full range of possible educational outcomes.[2] In the Outcomes Structure, information about outcomes is organized according to three dimensions: (1) *Audience*—the persons, groups, or things that receive or are affected by the outcome or that are expected to receive or be affected by it from a planning standpoint; (2) *Type-of-Outcome*—the specific, basic entity that is or is expected to be maintained or changed; and (3) *Time*—when the outcome occurs or is expected to occur.

Type of outcome has a major category called "status, recognition, and certification outcomes," for which there are many subcategories. Figure 1 illustrates how the different definitions of retention and attrition fit into this category. Recognition of educational completion or achievement, which is what links the four definitions under the rubric of educational outcomes, may be either formal or informal, depending on the goals of administrators, faculty, students, or all three, and on whether students remain in school. Retention and attrition fit into two subcategories of the "status, recognition, and certification outcomes" catagory: "completion or achievement award," which pertains to a certificate, diploma, or other formal award, and "credit recognition," which pertains to formal or informal recognition of completion or attainment such as formal educational credit hours awarded or informal recognition of goal attainment. Degrees, diplomas, and certificates are the tangible symbols of the knowledge, skill, and ability gained from institutions of postsecondary education.

Retention and attrition constitute one of the types of outcomes assigned to these categories. The categories contain other outcomes that are similar in some conceptual ways to retention and attrition, such as a sales award, a job promotion, being named a Rhodes scholar, academic grades, a financial credit rating issued by a credit bureau, and byline credit for a movie, play, book, or article. Based on this, it was appropriate that Lenning et al. (1974) include retention with grades and academic learning in their book on *Nonintellective Correlates of Grades, Persistence, and Academic Learning.*

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[2] According to Lenning (1977), educational outcomes are the end results of the processes that occur within postsecondary-education institutions and programs. The outcomes include both the direct results of these processes and any short-term and long-term consequences of those direct results. Furthermore, some of them are intended outcomes while others are unintended—and while outcomes are generically neutral, people attach positive or negative values to them. All types of retention and attrition are outcomes, according to this definition.

To reiterate, if one speaks of both the nature of the completion or attainment and the goals addressed, all the definitions previously discussed seem related. Clarifying definitions contributes to an accurate understanding of retention or attrition statistics. Each of these concepts of retention can contribute to an institution's understanding of its situation. For example, even though this information may be misinterpreted, the percentage of full-time entering students graduating in two years can be useful in the planning done by administrators of two-year colleges (especially when the same retention figures are available for analogous two-year colleges). A multi-index approach to retention documentation could also improve institutional and program-enrollment projections, but the validity of this hypothesis has not yet been empirically tested.

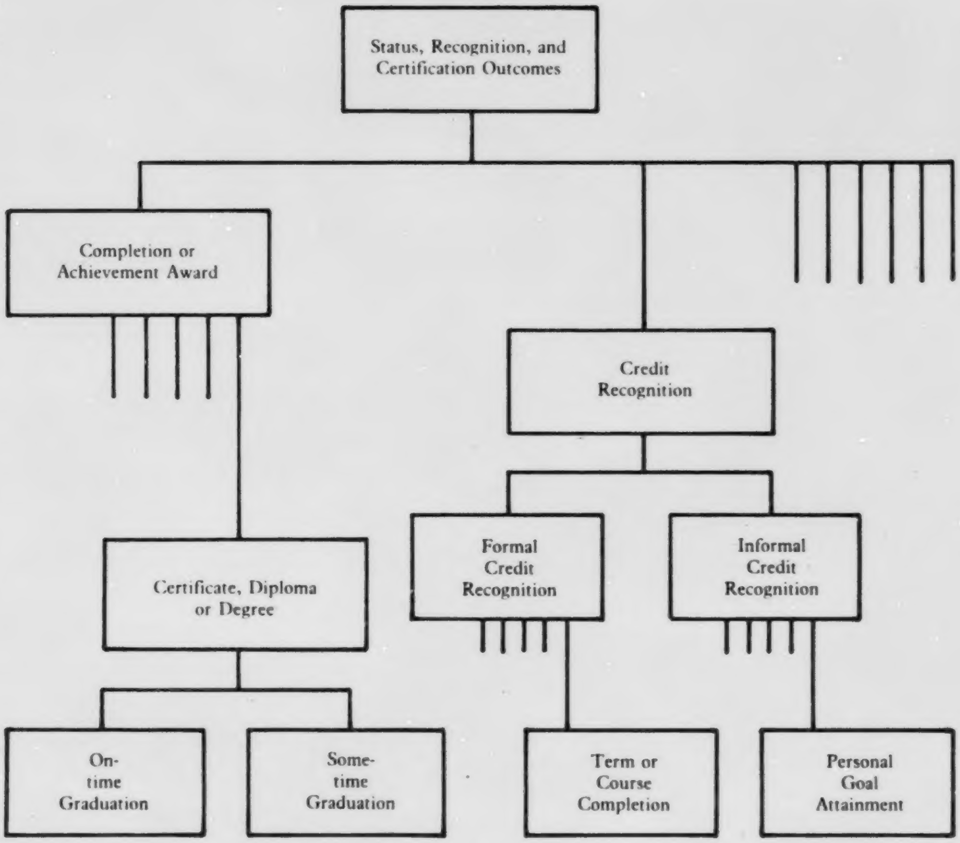
Status, Recognition, and Certification Outcomes
Completion or Achievement Award
Credit Recognition
Certificate, Diploma or Degree
Formal Credit Recognition
Informal Credit Recognition
On-time Graduation
Some-time Graduation
Term or Course Completion
Personal Goal Attainment

Fig. 1. How retention and attrition fit into the NCHEMS Outcomes Structure.

Person-Environment Congruence: A Synthesis of Differing Perceptions

While it is true that researchers and theorists have viewed retention from various perspectives, a common conclusion has been that retention and attrition result from the interactions between persons and institutions; to understand the retention situation one should understand these interactions. The characteristics of the interaction, not the student or institution alone, affect a student's decision to stay or drop out. Students remaining in school and attaining goals or completing a program represent a fit between a variety of factors relating to both the student and the environment. Conversely, the cause of attrition is a lack of fit between a student and the institution; this lack of fit can involve a wide range of factors, which vary with the student, the institutional program, and the situation. The complex array of factors and interactions often do not allow simple explanations. In spite of this complexity, however, there are major theoretical and research findings on retention that clarify this interaction.

THEORETICAL FORMULATIONS AND RESEARCH SUPPORT

While the bulk of attrition studies are empirically oriented, there have been valuable efforts to conceptualize and model the attrition process. Spady (1971) and Tinto (1975) used Durkheim's theory of suicide for insights relevant to student attrition.

Durkheim contended that the potential for suicide is greater when people are not sufficiently integrated into the fabric of society, specifically in terms of morals (values) and affiliations (interpersonal relationships and roots).

Spady (1970) suggested this analogy between Durkheim's view of suicide and student attrition:

> Although dropping out is clearly a less drastic form of rejecting social life than is suicide, we assume that the social conditions that affect the former parallel those that produce the latter: a lack of consistent, intimate interaction with others, holding values and orientations that are dissimilar from those of general social collectivity, and lacking a sense of compatibility with the immediate social system. However, since the student's academic role has many parallels with his future occupational role, it would not be inappropriate to extend this analogy a step farther. Poor performance in one's occupational role (viz. low grades) and inadequate identification with the norms of the occupational group (viz. low intellectual development) are also plausible additions to this system. The elementary Durkheimian model that we propose, then, consists of five independent variables, four of which influence the fifth, social integration, which in turn interacts with the other four to influence attrition. We would like to suggest further, however, that

> the link between social integration and dropping out is actually indirect. Intervening are at least two critical variables that flow from the integration process: satisfaction with one's college experiences, and commitment to the social system (i.e., college). [P. 78]

Spady believed that the Durkheimian model did not account for such factors as students' family background. He included that factor as a central component in an interdisciplinary model of attrition that he proposed (see figure 2).

This model accommodates the interactions between students (their abilities, attitudes, expectations, dispositions, habits, interests, and so forth) and the expectations and demands of fellow students, faculty, administrators, and the curriculum. If the discrepancies between the student and the environment are too great, the student may not be able to become assimilated and accepted into the academic and social systems of the institution. On the other hand, the rewards[3] within the system may be insufficient to provide the satisfaction that the student needs. If either of these situations persists, involuntary or voluntary withdrawal may result.

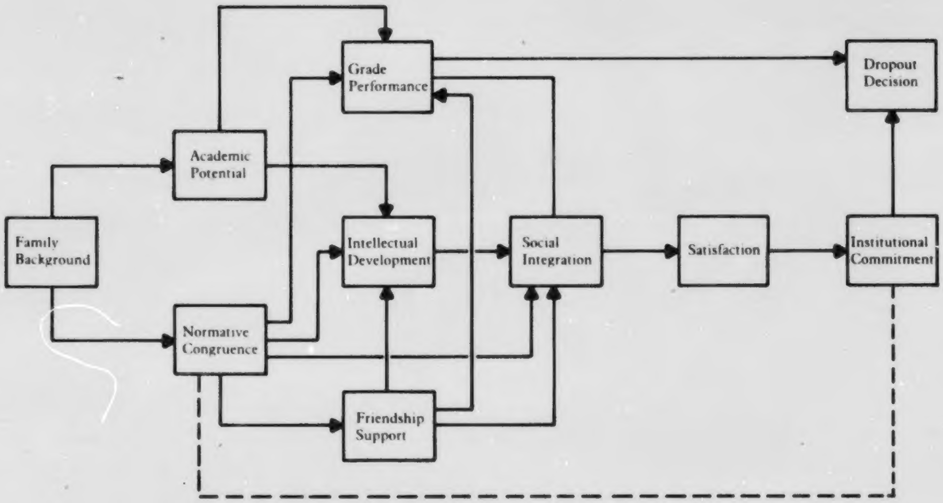

Fig. 2. A simplified presentation of Spady's model. [Source: William G. Spady, "Dropouts from Higher Education: An Interdisciplinary Review and Synthesis," *Interchange* 1 (April 1970): 64-85.)]

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[3] Spady posits two major rewards: grades and intellectual development.

In a later paper, Spady (1971) provides an expanded rational and empirical basis for his model. Figure 3 illustrates both Spady's attempt to demonstrate the relationship between the components of his model, looking at men and women students separately, and the complexity of the relations involved as identified in one empirical study.

Tinto postulated that attrition occurs when the student no longer is socially integrated with other members of the college community and when the student no longer holds the dominant values reflected in the institution's functioning. Perhaps more important than a specific hypothesis is Tinto's general postulate that attrition results from a social and cultural interaction between the dropout and other persons both inside and outside the college community over a period of time.

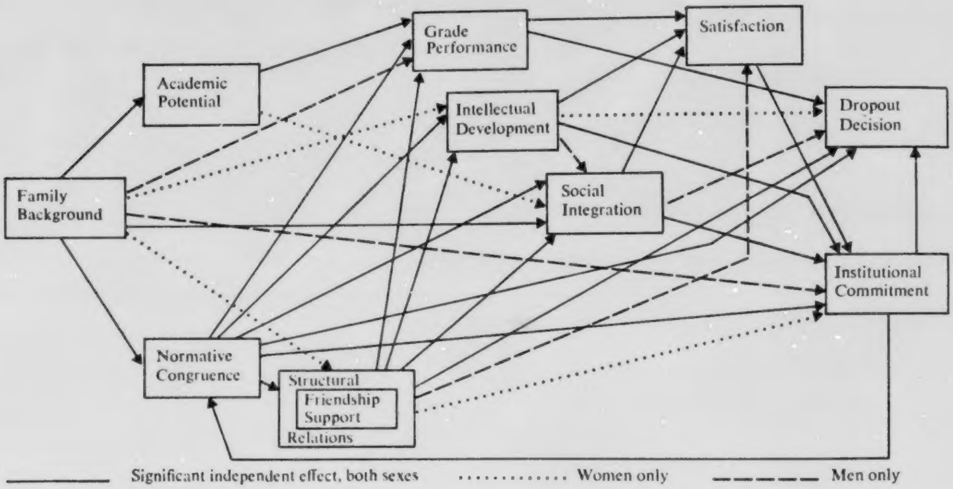

Fig. 3. A graphical expansion of Spady's model through presentation of dynamic relationships. [Reprinted from William Spady, "Dropouts from Higher Education: Toward an Empirical Model," *Interchange* 2, no. 3 (1971): 38-62.]

Tinto's schematic diagram of the attrition process is reproduced in figure 4. It is a longitudinal process in which ongoing interactions take place between the individual and both the academic and social systems within and around the college. Central to Tinto's model are interactions with both students and faculty in the formal academic and informal social settings. Both the frequency and quality of those interactions are presumably crucial to modifying the students' college completion goals and commitments to the institutions. Factors outside the college (such as a death in the family or changes in the economy) may also impact students' assessment of their college goals and commitments to the college. If the students' college completion goals and commitments to the institution remain strong and outweigh alternatives to college, retention will occur. If not, the decision will be made to withdraw. This conclusion is similar to the findings by Rootman (1972) of six variables that were found to explain most of the variance in withdrawal at the United States Coast Guard Academy; person-role fit and interpersonal fit were identified as the major determinants.

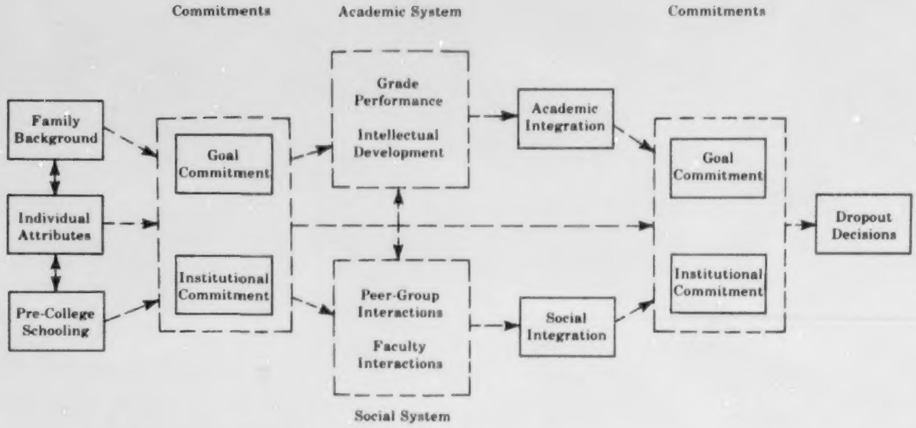

Fig. 4. Tinto's model of attrition. [Source: Vincent Tinto, "Dropout from Higher Education: A Theoretical Synthesis of Recent Research," *Review of Educational Research* 45 (Winter 1975): 89-125.]

During the last few years, a number of studies have tested these hypotheses of Spady and Tinto. In one study, Terenzini and Pascarella (1977) sampled 500 freshmen at Syracuse University, using the Adjective Rating Scale on both academic and nonacademic aspects of student life. The results of their factor analyses followed by discriminant analyses seem to support Tinto's hypothesis in that both academic and social factors could significantly differentiate persisters and dropouts in the predicted directions. In another study of Syracuse students, Pascarella and Terenzini (1979b) tested the model by relating persistence to the amount of interaction outside of class between students and faculty. Again, the theory was supported.

In other studies of students at Syracuse these two researchers examined (1) the relationship of precollege student characteristics to attrition and interactions between precollege traits and freshman-year experiences (Terenzini and Pascarella 1978a; 1978b); (2) frequency of student-faculty informal contact, with the variable student charactristics and measures of social and academic integration controlled. (Frequency of informal contract with faculty was a variable not controlled.) (Pascarella and Terenzini 1979b); (3) quality of student-faculty informal contact with other variables controlled (Pascarella and Terenzini, in press); and (4) both frequency and quality of academic and social contacts between faculty and students, separately by type of contact, and for each sex (Pascarella and Terenzini 1979a). All these studies strongly support Tinto's theory, but they also suggest a need for models and thinking that are more specific and rigorous. As Terenzini and Pascarella state:

> These findings have both theoretical and practical implications. First, the Tinto model, as it presently stands describes in a rather general fashion both the nature of the particular variables believed to be most importantly involved in attrition and the relations believed to exist among them. As noted, such a model has considerable utility for focusing the thinking of researchers and administrators alike, but the series of studies described here suggests that the time may be near for specifying the variables and relations more precisely so that more crisply focused research may proceed. It seems clear that the attrition process is a far more complex phenomenon than we have tended to think it is, and certainly the bulk of the dropout research fails to take into account the web-like network of relations to which the studies described here have begun to point. Unless the designs of future studies are sensitive to these considerations, they are unlikely to meet the expectations of either researchers or administrators. At best, they will yield only a partial, oversimplified picture of what seems to be a highly complex set of dynamics. [P. 12]

Husband's (1976) research at Spring Arbor College also seems supportive of Tinto's theory; the author reports that proportionately more dropouts than persisters had no "significant other." Data from Savicki's (1970) University of Massachusetts study indicate that persisters display more interest in social development than dropouts. Hanson and Taylor (1970) report the contradictory finding that persisters tend to be undersocialized. Their study, however, was of students at a technical institute, a quite different environment with emphasis more on course work and less on socializing.

Starr, Betz, and Menne (1972) formulated another pertinent theory of person-environment fit. According to this theory, a student attempts to arrive at a congruence across the broad range of the academic and social press of the institution. Success yields rewards and persistence; if the student is unable to achieve congruence, attrition occurs.

Still another theoretical view of retention and attrition as congruence or discrepancy was developed at Miami-Dade Community College (Flannery et al. 1973). Attrition was operationally defined as "the discrepancy between student expectation and attainment" (p. 4). According to the report, attrition was a result of a combination of factors that contributed to whether or not student expectations could be realized. Flannery divided these factors into categories of society, student, and college and portrayed them through overlapping circles (figure 5).

Flannery proposed three ways for an institution to influence factors that might contribute to students' achieving their goals or not. One strategy was to determine acceptable levels of attrition based on the definition to be established at the class level, the department level, and the division level of the college. Next, the institution should follow specific recommendations, which Flannery categorized by level as institution, division, department, and faculty. Participants at each level would be responsible for helping students to determine their educational goals and to attain them.

The campus committee concluded that any policies and procedures that did not foster personalized education contributed to attrition. The report recommended that the campus conduct a review of all currently effective policies and procedures to determine which, if any, should be revised to provide an optimal environment for personalized education of students (p. 13). In these ways, according to the report, the concept and treatment of attrition could be addressed from a total institutional perspective and directed to specific students and their educational satisfaction.

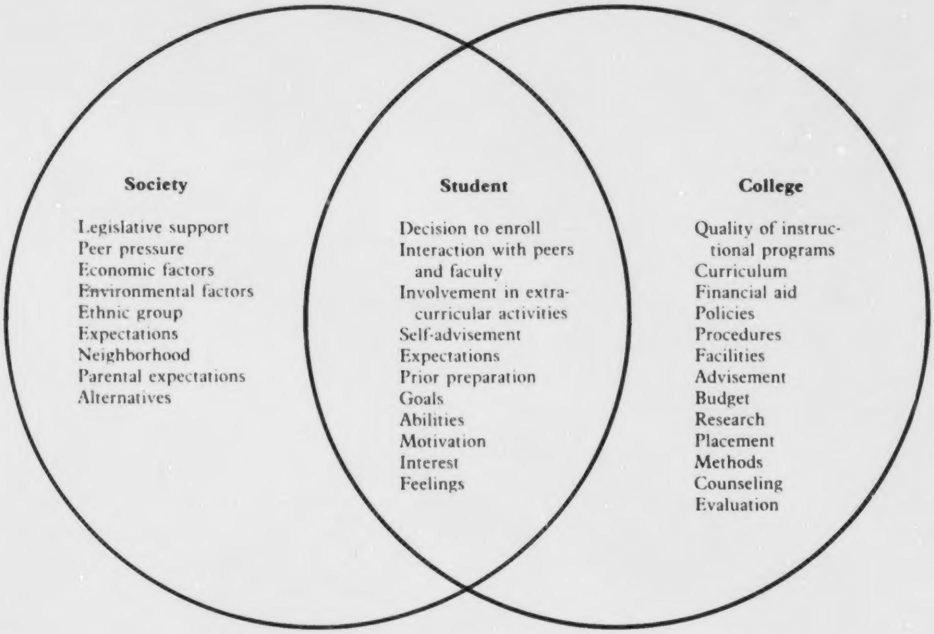

Fig. 5. Model of factors affecting student persistence in college. [Source: John Flannery, Charles Asbury, Cynthia Clark, David Eubanks, Barbara Kercheral, John Lasak, James McWorter, Louise Skellings, Douglas Smith, and Connie Sutton, *Final Report for the Ad Hoc Committee to Study Attrition at Miami-Dade Community College* (Miami: Miami-Dade Community College, 1973).]

Alfred (1974) tried to apply symbolic interaction theory to retention and attrition. Alfred probably best portrays the size and complexity of the array of student factors that can be involved in retention and attrition. Although he is not as explicit about the factors involved on the environmental side of the equation, his is an interactive model. The fundamental premise of symbolic interaction theory, upon which Alfred's attrition model is based, is "that interaction of the student within an individual-group-setting relationship is the framework for personal structuring of verbal and non-verbal behavioral outcomes in higher education" (p. 1).

In his model, Alfred identifies 15 genetic factors, 16 internal factors, and 21 external factors that he found to be the primary factors involved in the decision of a community-college student to withdraw from college; presumably this model could apply to all college students. As outlined by Alfred (1974), the model operates as follows:

> The model's approach begins with a conception of the unity of experience and behavior. Although every experience is not immediately translated into action, whatever action is taken is the outcome of central integrating processes which are shaped by diverse, genetic, internal, and external factors. . . . Behavior is the consequence of central psychological structuring or patterning; it is the unity of experience and action. Behavioral activity exercised by the individual is not a direct outcome of external stimuli, internal impulses, or genetic inheritance. Behavioral activity follows central psychological patterning of all of these factors within the self. The individual need not be aware of separate contributing items to behavior originating from external stimulating conditions or from inside the self. Functionally, inter-related genetic, internal, and external factors operating at a given time constitute the frame of reference for behavior and attitudes formed by the individual. Observed behavior (verbal or nonverbal) can be adequately understood and evaluated when studied in terms of its appropriate frame of reference. . . . Applying principles of this model to the phenomenon of student attrition in higher education, it is readily apparent that a score of factors may be involved in student withdrawal. . . . Individual factors in each group may exert varying degrees of influence as factor determinants of student attrition tendency. For example, a combination of factors such as age, toleration of ambiguity, degree aspiration, financial status, commuting distance from college, work status, similarity between home and college environments, and ability to delay gratification may, in one case, be a set of factors which determine withdrawal from college study. Certainly variable sets of this type may vary from one student to another insofar as individual predisposition toward withdrawal from college is concerned. [Pp. 8 and 13]

Based on his model, Alfred gathered data by using a questionnaire administered to all new and returning part-time and full-time students during the fall semester of 1972. Eighty-eight percent of the students responded. Using chi-square analyses to compare persisting students to nonpersisting students, he obtained a significant relationship with student attrition at the .01 alpha level for 17 of the 23 variables he examined: enrollment status, class attendance, class-level status, sex, age, veteran status, self-income, place of residence, financial status, financial-aid intention, work status, mode of transportation, reason for pursuing college, reason for selecting a two-year college, career plans, plans to continue enrollment, and degree plans.

Two additional general models that apparently have not been applied to retention and attrition seem pertinent to this discussion. One theory that does not focus on retention, but seems applicable, was formulated and tested extensively by Holland (1966; 1973). It has admirably withstood the test of the abundance of empirical exploration that it has stimulated. Holland's theory relates adjustment and functioning to personality types and to environment types, each set with the same names: (1) realistic, (2) intellectual, (3) social, (4) conventional, (5) enterprising, and (6) artistic. Holland's theory has generated much research that, although it has focused largely on young adults, tends to confirm its applicability and validity to choices of institution, choices of occupation, and functioning within institutions. Based on empirical research, Holland carefully defined each personality and environmental type and has developed an inventory that reliably and validly rates college students on each of the factors. Each student is characterized by a score pattern across the six personality types rather than by being placed in one of the categories, although most students will be closer to one or two of the types than to the others. The same is true of the college environments; each is a mixture of the six types, but usually one or two predominate.

When correlations among the six types are graphed, a hexagon pattern emerges; a greater distance between two points indicates a greater dissimilarity. In the pattern as shown in figure 6, the intellectual and enterprising types, for example, are dissimilar.

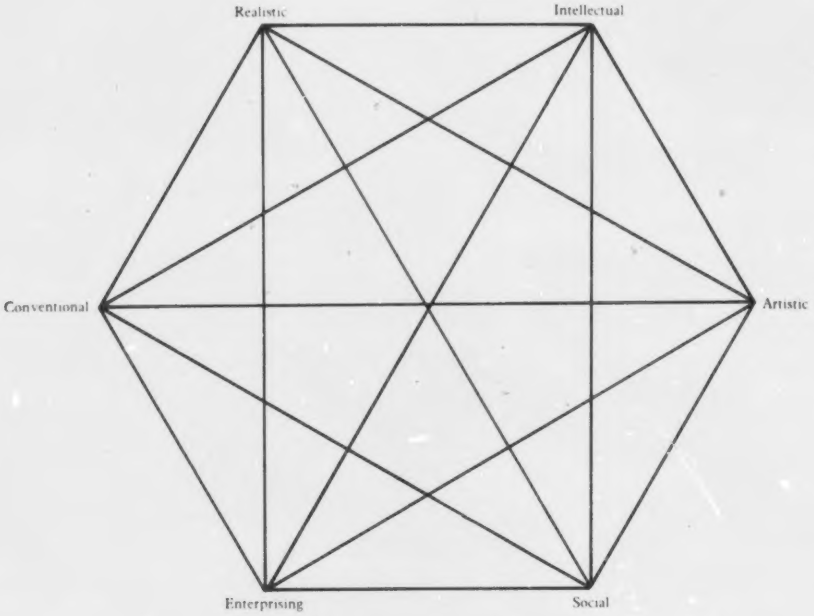

Fig. 6. Intercorrelations found among Holland's types.

Figure 6 suggests that an artistic person will be happier and most likely to persist at a college that has an environment highly artistic in orientation. The same student would be (1) somewhat less likely to persist in a college that is either primarily intellectual or primarily social in its orientation, (2) even less likely to persist if the college environment is primarily enterprising or realistic, and (3) least likely to persist if it is primarily conventional in nature.

Festinger's cognitive dissonance (1962) is another general formulation that would seem to add insight about the person-environment interaction. This theory deals with individuals' perceptions and knowledge about themselves (needs, desires, talents, interests, goals, and so forth), the social environment (peers, instructors, policies and regulations, parental expectations, living conditions, interpersonal relations, and so forth), and the individuals' positions and situations within the environment (difficulties with course work, personal problems, and so forth). Dissonance or "nonfitting relations" among these cognitive or perceived elements gives rise to pressures to reduce the dissonance or avoid more dissonance through processes like behavior change, perception change, or seeking out new information that will improve the fit of various disparate elements. Furthermore, the magnitude of the dissonance and the pressures to reduce it are greater when the elements are more highly valued. This suggests that students with strong perceptions of personal needs that are not being met by the college will be more likely to try to remedy the discrepancy (for example, through dropping out) than will those who consider their unmet needs to be less serious. Of course, each student has a broad and complex array of congnitive elements with varying patterns of discrepancy and congruence across pairs of elements; when the number of possible combinations is considered, it is no wonder that it seems impossible totally to explain attrition in many cases. Some of the most relevant variables may not be apparent to many observers. Furthermore, the same situation or event may elicit different perceptions from two individuals because of different expectations, motivations, values, reactions to stimuli, emotions, and so forth. The addition or subtraction of influencing variables affects the remaining variables; once a choice is made, it creates new kinds of dissonance (for example, guilt, the need to rationalize the decision in a socially acceptable manner, and the need to decide what to do after dropping out).

As in the case of Holland's theory, Festinger's theory has generated much research that tends to confirm and support it. The authors selected Festinger's theory over the other congruence and consistency theories because it is experimentally supported.

Although other reviewers of the retention and attrition literature also conclude that student-college congruence is a key to retention (for example, Pantages and Creedon 1978), none of the reviewers emphasizes lack of fit as the underlying problem as strongly as Cope and Hannah (1975). They state that the lack of fit can pertain to a number of factors:

> Our research tells us it is the fit between student and college that accounts for most of the transferring, stopping out, and dropping out. A student from a rural background attending the large, impersonal university, for example, may find certain needs are not met; indeed, the orientation of the university and the people may be a threat, and the reaction to this situation may preclude successful adaptation to any form of higher education. The same student, if attending a small friendly, rural college may still find the institution's characteristics unsatisfactory. Relationships between student and college are not as simple as either of these illustrations. A major task of this book is to illuminate the many ways person and environment are not complementary and to suggest means of enhancing the relationship. It *is* the fit that counts. [P. 3]

Cope and Hannah categorize discrepancies of this type under groupings such as poor choice, bureaucracy, teaching quality, identity seeking, value confrontations, and circumstances. In addition to their own research, they cite studies such as (1) Pervin and Rubin's (1967) examination of discrepancies between students' perceived self and college, self and other students, and actual college and ideal college; (2) Keniston and Helmreich's (1965) exploration of how the college promotes or thwarts identity development, frustration tolerance, and discord with parents; and (3) Nasatir's (1969) comparison of student academic versus nonacademic orientation to the dormitory environment on these factors as related to attrition.

They could have referred to additional relevant studies. For example, studies on creativity, such as Heist's (1968), have found that numerous creative and high-ability college students who later became renowned writers and artists dropped out of school because they found the environment stifling and an antithesis to their creative expression. In addition, a test-retest study of students at a strict, church-related college (Lenning 1970a; 1970b) found that those students who had the least "educational growth" (many of them went down markedly on achievement retest after two years of college), and who were thus prime candidates to drop out, had a lifestyle that was markedly different from the lifestyle of most students on the campus; those students who were found to have grown the most academically generally had lifestyles congruent with the campus.

The studies that have examined the typical sequences in the withdrawal process also provide findings that are pertinent. For example, Leon (1975) conducted in-depth interviews of 15 Chicano students who dropped out between 1969 and 1971. Those interviewed had been enrolled in the Educational Opportunity Program at the University of California, Santa Barbara. In analyzing the reasons given for dropping out, Leon identified four temporal phases in the development of the dropout rationale: (1) original rationale for entering college, (2) deterioration of original rationale, (3) transition from original to leaving rationale, and (4) adoption of leaving rationale. Because this is such a small and perhaps atypical sample of dropouts, generalization to a larger population is risky. It seems logical, however, that similar phases apply to most dropouts as they develop their rationale for leaving. The study suggests, as a hypothesis for further research, that the college can more effectively intervene to prevent dropouts if the intervention takes place prior to phase 4 or in as early a phase as possible.

A study of the withdrawal process that focused on a more typical sample of college dropouts was conducted by Chickering and Hannah (1969). At 13 small colleges they interviewed students who indicated they would not enroll in the fall. The researchers also completed institutional classification sheets and had the students who dropped out complete a questionnaire. Most of the dropouts described their feelings as ambiguous and in conflict; they lacked purpose. The fact that they did not talk to appropriate institutional personnel might suggest distrust and ill-fit. Peers and parents were reported to be the primary confidants for all 11 discussion topics considered in the study. The picture of disorientation, lack of purpose, and minimal interaction with institutional personnel during the entire withdrawal-preparation process suggests that a problem of student-college fit existed. To overcome the apparent discontinuity in the prevailing institutional climate and student-faculty relationships, Chickering and Hannah emphasized that faculty should become more sensitive and accessible to students and that the overall institutional climate and atmosphere should be modified.

HOW STUDY RESULTS OF STUDENT AND INSTITUTIONAL CHARACTERISTICS FIT INTO THE PICTURE

A multitude of studies have related student characteristics to attrition and retention, and the consensus of most previous reviewers has been that the results have been inconsistent except for a few student variables. These largely single-institution studies can be grouped by type of institution and type of program. Problems in study design and data-collection procedures need to be taken into account, however, in interpreting these findings. Taken as a total group and examined from a person-environment interaction and congruence perspective that also considers apparent problems with study design and data collection, what have heretofore seemed like inconsistent findings start to make sense.

A much smaller number of researchers have tried to relate institutional characteristics to retention and attrition. Considered in the light of the findings from the studies of student characteristics, and from a person-environment interaction and congruence perspective, the results of these studies, as a total group, also make sense. There are a few other studies in which both student and institutional characteristics have been examined in relation to retention and attrition. The results of those studies that were not based on theory strongly support the validity of the theory of person-environment congruence.

Studies of Student Factors

Most of the empirical literature on student characteristics relates to attrition results from research conducted at a single institution or a small number of institutions. One noteworthy exception is the study by Trent and Medsker (1968). Trent and Medsker's sample involved over 10,000 high-school students from several states through a six-year period. These researchers explored differences in personality development—including growth of autonomy, intellectual interests, and enlightened self-awareness—in persons who remain in college and in those who do not.

Findings suggest that college persisters entered college with an attitudinal predisposition that enhanced their development in college; this disposition was not evidenced in dropouts. The study also indicates that irrespective of ability and socioeconomic status, persisters (1) were more intent on attending and graduating from college; (2) were more selective in choosing their institution; (3) saw more reasons for attending college; (4) studied harder; (5) were less prone to allow social life to interfere with their studies; and (6) tended to be more intellectual, self-reliant, and open-minded than were dropouts when they started college.

On an even larger scale was Astin's (1975c) longitudinal study of more than 41,000 undergraduates attending 358 two-year and four-year colleges and universities considered representative of all higher-education institutions in the country. As freshmen, the students responded to one questionnaire; four years later they responded to another. In addition to questionnaire responses, Astin used student scores on standardized college entrance exams. Although any attempt to summarize the largest empirical study of persisters and dropouts is somewhat inadequate, Astin's study indicates that

> drop-out prone freshmen are those with poor academic records in high school, low aspirations, poor study habits, relatively uneducated parents, and small town backgrounds. Dropping out is also associated with being older than most freshmen, having Protestant parents, having no current religious preference, and being a cigarette smoker. Among freshmen women, those who are either married or have marriage plans are also more likely to drop out; although male freshmen being married at the time of college entrance is related to persistence.
>
> The predictors associated with low dropout-proneness produce the opposite pattern. In addition, low dropout-proneness is further associated with being either Jewish or Oriental, with winning varsity letters in high school and with plans to attend more than one college.
>
> By far the greatest predictive factor is the student's past academic record and academic ability. Next in importance are the student's degree plans at the time of college entrance, religious background, and religious preference, followed by concern about college finances, study habits, and educational attainment of parents. [P. 45]

In this work, Astin included worksheets and estimation procedures for predicting the chances of dropping out for individual students or groups of students. The worksheets consist of regression weights for groupings of students—white men, white women, blacks in black colleges, and blacks in white colleges—specified across 64 weighted variables associated with persistence or attrition.

Astin (1975c) also explored the utility of matching student characteristics to those of the institution. He found that retention was enhanced if the students at the college were similar to the typical entering student on such background characteristics as town size, religion, and race. Matching on background factors such as parental income, parental education, and student ability showed no significant relationship to persistence.

Considerable study has been conducted to determine the effects of urban and rural backgrounds. In most studies, the findings suggest that rural students are more likely to drop out. (Astin 1975c; Aylesworth and Bloom 1976). Socioeconomic level, family size, sibling order, and high school have also been found by many studies to affect retention. In each case there have been other studies that found no such effects. Concerning socioeconomic level, observed relationships between levels of parental income or parental occupation and student persistence in college have disappeared when academic aptitude, motivation, and other family background factors have been controlled (Astin 1975c; Eckland 1964c; Pantages and Creedon 1978). The literature indicates mixed findings with regard to educational level of parents and student retention. Pantages and Creedon (1978) report, for example, that several studies find no such relationship between parents' education and student retention. Important to consider is the fact that children having parents who are not college-educated, with biases against attending college, probably had to have special abilities and motivations in order to enter, and thus would be expected to persist. Possibly some of the studies that did not control for both motivation and ability would find no relationship—and especially at prestigious colleges. Such confounding variables that need to be controlled are undoubtedly present for the other variables listed also; additional research is needed.

A relatively large body of literature exists regarding the effect of student motivation and psychological disposition on attrition. A commitment to college (Hackman and Dysinger 1970), clear-cut goals (Angers 1961) with respect to college and career, and certainty of goals (Abel 1966; Demitroff 1974) are all important factors related to persistence. Lack of such differentiation is probably one reason why studies relating motivation to attrition have so often found insignificant results—which caused Pantages and Creedon (1978) to downplay motivation as a major factor in retention and attrition. This lack of differentiation may also explain why numerous studies have found inconsistent relationships between occupational goals or objectives and retention. Iffert (U.S. Department of Health, Education and Welfare 1957) found occupational goals to be related to retention at some types of institutions, such as technical institutes and teachers colleges, but not at other types of institutions. Some studies point out that high family expectations about success in college also correlate positively to persistence (Panos and Astin 1968). Other studies suggest that, in many cases, the dropouts believed that leaving school served a useful and beneficial purpose (Hoffman, Ganz, and Dorosin 1974).

As with motivation, personality traits would seem to be plausible variables for affecting retention and attrition. As is also true of motivation, however, different personality traits can conflict with one another in terms of effects on attitudes and actions. In addition, personality scales tend to be relatively unreliable and unstable measurement instruments. The inability to measure personality factors accurately does not make them any less important with respect to retention and attrition. Pantages and Creedon suggested that personality factors were unimportant, after viewing all the nonsignificant findings in the literature. They reached such a conclusion even though a number of studies have found some significant differences (they said it could be due to chance or a special local situation). However, they admitted that it could be primarily because personality scales lack power or that studies have tended to use very gross dropout/persister categories. Concerning the second problem, for example, Rose and Elton (1966) were able to differentiate clearly two types of persisters and two types of leavers through the application of discriminant analysis to personality test scores. If Pantages and Creedon (1978) had reviewed the many studies that have tended to support Holland's (1966; 1972) theory of personality pattern versus environment pattern congruence and discongruence, which they did not, they probably would have concluded that personality factors are important in retention and attrition. Is it not possible, for example, that Smith's (1976) finding of dropouts being more able to deal with ambiguity and uncertainty (as well as being more autonomous) was the opposite of Brawer's (1973) finding that persisters were more able to tolerate ambiguity (and to delay gratification) because they were in very different kinds of campus environments? Smith's study was done at a women's college, while Brawer's focus was on community colleges. Note that Smith's findings, together with some hypotheses about the environment of the institution, led him to conclude that considerably more research is needed into the impact of the environmental press on persistence and attrition.[4]

Many studies have found positive correlations between retention and such personal characteristics as intelligence, high-school achievement, freshman college grades, self-confidence, self-concept, study habits and attitudes, and interests to persistence in college. Timmons (1978) reports that both male and female dropouts had poorer self-concepts and were more dissatisfied with their lives at college entrance than were persisters. The study also indicates that dropouts, particularly males who left school voluntarily, seemed to consider dropping out as a positive step toward improving their self-concepts and breaking away from their parents.

[4] Environmental press refers to the student's behaviors and orientations that are rewarded or discouraged by the orientation and pressures present in an institutional climate. For example, one institutional climate or environment may emphasize intellectual growth and scholarship; another, creativity and independence; another, preparing for an occupation or job; and so forth.

In general, male dropouts reported that they entered college largely to please their parents. Terry (1972), in interviews of former students who were dropouts and graduates, found that factors other than intelligence and academic ability were often most important. This hypothesis seems plausible when one considers the statistics that show that the majority of dropouts are voluntary. Terry also found that (1) the oldest child in the family is often more persistent in college, (2) marriage correlates negatively to success, (3) only children withdraw more often than do those having one or two siblings, (4) being from a large family reduces chances of graduation, and (5) an early decision to attend college aids persistence. The fact that an early decision to attend college would aid persistence is not unexpected, based on a 1957 survey of high-school seniors in Wisconsin with a follow-up survey in 1964 which assessed educational and occupational attainment (Little 1958; Sewell and Shah 1968a, 1968b). Student decisions to attend college, and persistence through to graduation, were found to be related to encouragement received from parents to attend college. This encouragement was related to parents' attitudes toward college, their education, and their incomes. Student values seemingly should influence retention although some findings suggest otherwise (Dollar 1970). Many studies do not compare student values to values predominant in the environment, as Lenning (1970a; 1970b) did when he found student-environment differences in values to markedly affect educational growth at a conservative church-related college.

Many studies have investigated the effect of gender on persistence. Unfortunately, findings of these studies are not consistent. In Pedrini's (1976) study at the University of Nebraska, student gender was not a good predictor of attrition. Max's (1969) CUNY study reported that, in most instances, male and female dropouts gave essentially the same reasons for leaving; exceptions included marriage and moving out of the New York area (a reason more women gave than men) and of joining the military (a reason more typically given by men). Astin's (1975c) findings with a national sample agree, although he reports that men definitely tend to give reasons of poor grades, boredom, and dissatisfaction with requirements or regulations more often than women. After reviewing five other studies, Pantages and Creedon (1978) concluded that women generally drop out more for personal reasons and men more for curricular reasons, with financial reasons ranking high for both sexes. (See pages 87-92 for a discussion of still other studies that explored students' reported reasons for dropping out.)

Brabant and Garbin (1976) reported mixed results when sex-typical experience (experiences most experienced by sex)—instead of the simple biological designation—were used as predictors of attrition. Using Omnibus Personality Inventory Scores, Cope (1968b) found lower religious-liberalism scores associated with men leaving college, lower scores on aestheticism and theoretical orientation to be associated with dropout for women only, and higher scores on social maturity to be associated with persistence for both sexes. Pascarella and Terenzini (1979b) found that the frequency and quality of social contacts with faculty correlated more highly to retention for women than for men students, while the frequency and quality of academic contacts with faculty was more highly related to retention for men than for women students. Both Astin (1964) and Cope et al. (1971) found that women drop out more often at institutions having a high proportion of men in the student body.

None of these studies on sex differences controlled for the college goals of the men and women, examined the match between the college and the two groups of students on a large variety of factors, or compared the college goals at entrance and exit to trained counselors' observations of the students' reasons for leaving. Had these variables been controlled, the results may have indicated no significant differences in retention between the sexes. For example, the study of the Hofstra University freshmen classes between 1964 and 1969 conducted by McDermott and Lichtenstein (1974) and of California State University at Northridge freshmen between 1971 and 1977 conducted by Newlon and Gaither (in press) found that women consistently persisted better than men up to five years after entering college. These differences in retention rates for men and women could have resulted from more congruence on a variety of factors for women than for men at these particular universities.

Etaugh and Bowen (1976) conducted a longitudinal study at Bradley University in which men and women were surveyed about their views of women's issues. For each school year, male upperclassmen had less liberal attitudes about women's issues than did male dropouts; the opposite result was true of women persisters and dropouts. The author speculated that one reason for the increasingly liberal view of women among upperclass women is that women with less liberal views were the ones who dropped out.

With regard to studies of students of the same sex, Morgan (1974) reports that among male students entering the University of Kentucky in 1966, persisters were found to be more conforming, practical, career-oriented, and in general more similar to the University of Kentucky prototype student. A number of those who were most capable, independent, autonomous, creative, scientific, theoretical, and able to get along well with others voluntarily withdrew from the university. These results might be contrasted with the findings of Stark (1975) who studied female persisters and transferring students. While Stark found no significant differences in ability measures between the two groups, the students who elected to transfer from the institution were found to have a preference for informal classroom settings and to hold an egalitarian attitude toward the faculty.

In recent years, a number of studies have focused specifically on particular groups of disadvantaged students. Astin (1972a), for example, found the retention rates for black college students to be lower than the rate for white students for all of four different measures of retention. However, when academic aptitude and high-school grades were controlled, retention rates for blacks were at least as high as for nonblacks—they were higher on two retention indices and equal on the other two indices of retention. A later report (Astin 1973b) indicated a similar finding for Native Americans who in the early 1970s, along with Chicanos, had the highest observed dropout rate overall: 31 percent for Native Americans and Chicanos, compared to 29 percent for blacks, 24 percent for whites, and 19 percent for Orientals (Astin 1975c)[5]. However, Spanish-speaking minorities still had lower retention rates than whites, after the variables of ability and high-school grades were controlled.

Armstrong and Hall (1976) concluded that while students in programs for the disadvantaged had lower completion rates, the disadvantaged persisters performed as well as the regular-entry students. Padney (1973) compared the Cattell 16 Personality Factor test scores of persisting and nonpersisting black students at an integrated university and found persisters to be more humble and submissive, with dropouts more assertive, independent, and stubborn. In their study at the University of Maryland, DiCesare, Sedlacek, and Brooks (1972) found that black students who returned the second year, compared to those who did not, exhibited more self-confidence, higher expectations, perceived more racism on campus, and felt more strongly that the university should influence social conditions.

Astin's evidence that aptitude levels and high-school grades accounted largely for the low observed retention rates of black and Native American students is persuasive. On the other hand, those factors result from a disadvantaged background, for which the college should attempt to compensate. Reed (1978) suggests that colleges need to be more careful not to alienate minority students, to help them overcome their lack of basic skills, and to provide special counseling. Walton (1979), in turn, emphasizes the need (1) to provide appropriate role models for minority students to interact within a mentor-student relationship and (2) to recognize that many disadvantaged minority students learn to excel academically at a rate different from the more advantaged students. To accomplish these goals, Walton indicates that the college or university must identify, support, and reward appropriate mentors in each disciplinary area of the institution.

Another portion of the attrition literature focuses on other segments of the total student population. Kamens (1974), for example, studied student persistence at high-prestige institutions; Newman (1965), in a similar study, focused on highly selective liberal-arts colleges. Approximately a decade ago, a number of studies focused on attrition among high-aptitude students. Hill (1966) reported that creativity, originality, spontaneity, and independent achievement correlated positively to persistence. Faunce (1968) focused on academically gifted women. Several studies focused on students enrolled in specific programs; for the most part, these studies tended to focus on students in science programs. For example, several studies have been reported on engineering and technology students (Miller and Twyman 1967; Hanson and Taylor 1970; Athanasiou 1971; Foster 1976), at least one in veterinary medicine (Hooper and Brown 1975), and at least one in medical education (Johnson and Sedlacek 1975). Other studies have focused on students in university arts and sciences colleges (Cope and Hewitt 1969). Lunneborg and Lunneborg (1973) studied doctoral psychology students at the University of Washington. Generally, the differences in findings across programs support dissonance theory, with those persisting tending to be or become more similar in characteristics, orientation, and needs to the stereotypes and expectations associated with their career areas. (The same is true of studies that examined retention across fields [Newlon and Gaither, in press].) For example, Miller and Twyman (1967) found engineering and technical-institute persisters to have significantly more interest in the tangibility and usefulness of things and in the desire to achieve. Conversely, the dropouts had significantly higher scores on social, affiliation, and nurturance needs (all three relating to a need for interaction with others) than was true for the persisters.

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[5] For Chicanos in four-year colleges and universities, however, the dropout rate was found to be lower than for whites (14 percent compared to 18 percent). Other percentages for these institutions were Orientals, 10; blacks, 23; and Native Americans, 28 (Astin 1975c).

In general, the literature on student factors related to retention and attrition shows considerable similarity between community colleges and four-year colleges and universities. Nevertheless, there are some differences in the findings. The differences, as found by Astin (1973b), however, are not pronounced. Furthermore, many of the factors that are related to attrition are those over which the institution has little or no control.

It would be expected that students would leave community colleges more often for employment reasons. Two community-college studies that report employment as a major reason for withdrawing are Bucks County (1973) and Martin (1975). Anderson (1967) focused on students who fulfill their admissions requirements but fail to enroll at the beginning of the semester. Financial difficulties were given as the major reason for these early withdrawals.

A number of community-college studies have examined the personality characteristics and personal motivations of persisters and dropouts. Blai (1972) examined studies of Harcum Junior College and the Pennsylvania Department of Education, both of which suggested that strong personal motivation was a key factor favoring student persistence. Brawer (1973) reported that persisters are better able to delay gratification and tolerate ambiguity.[6] Jaski (1970) reported that dropouts were less intellectually oriented than persisters.

Studies of institutional factors

Few studies have tried to relate retention and attrition to college factors, as compared to those focusing on student factors. This is probably because most of the studies have been done strictly for local use, which generally results in an institutional sample of one. However, Nelson (1966) compared 100 randomly selected schools for those that had high attrition to those that had low attrition. (Fifteen of the 22 variables analyzed added significantly to differentiating the two groups; 10 were student characteristics and 5—proportion of women in the student body, selectivity, how small the college is, how small the surrounding community is, and amount of institutional affluence related directly to retention—were institutional characteristics.) Astin's (1975a; 1975c) are other studies. In his writings, Cope (1970a; 1970b; Cope and Hannah 1975) emphasized that there is no such thing as a dropout personality. Instead, the dropout phenomenon should be viewed as a result of a series of interactions between the student and the institutional environment. Cope and Hannah (1975) cite mainly studies of four-year colleges and universities. Many studies have found that living on campus enhances a student's persistence (Alfert 1966; Bolyard and Martin 1973; Nasatir 1969; DiCesare, Sedlacek and Brooks 1972; Chickering 1974; Astin 1975c; Kuznik 1975). Furthermore, Nasatir found that matches within the residence may affect retention. Kuznik's study at the University of Minnesota Technical Institute at Crookston reports that matching on student background and characteristics is particularly important for freshmen. The residential arrangements may appear to be related to a student's ability to integrate socially with the rest of the college community.

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[6] As noted earlier, Smith (1976) reports opposite findings at a women's college regarding the ability to tolerate ambiguity. See page 56.

A major hallmark of the theories of Spady (1971) and Tinto (1975) is the attention given to relationships between students and peers and students and faculty, a primary influence of retention and attrition. The research reported on pages 46 and 47 demonstrates the importance of both student-peer and student-faculty interactions and relationships. Both the frequency and the quality of these interactions, at least with faculty, appear important.

The research on residential housing referred to above also indicates the importance of student-peer relationships concerning retention. On the other hand, research about the relationship between retention and student extracurricular activities has often been inconclusive. After reviewing the various findings, Pantages and Creedon (1978) were "forced to conclude that such activities are not a primary factor in attrition" (p. 79). A number of studies (Everett 1979) have found positive relationships between retention and extracurricular involvement, however.

The various studies of Pascarella and Terenzini referred to earlier highlight the importance of frequent and positive student-faculty contact. In addition, Noel (1976) and Schulman (1976), among others, have cited the importance for persistence of having a "significant adult" on campus. Grites (1979), in turn, has proposed that colleges can stimulate an important increase in the number of students having significant adults on campus by selecting and training a number of special faculty academic advisors. He also points out (as do Lenning and Cooper 1978) that the recruitment and admissions processes are crucial factors in determining retention, and that these academic advisors will become integral parts of those processes as well. Grites writes:

> The academic advisor is the natural resource to make use of both the affective and congnitive determinations cited above. As advisors find out more about

> student involvement, commitment, and course selections, they will, in turn, become significant adults; as they become apprised of and gather certain information about their students, they will be better able to provide the kind of assistance needed to improve retention. The academic advisor is an integral component of admission and retention programs, and such a resource should not be left unused, since those who are not working for retention are, in fact, working against it. [Pp. 25-29]

A small portion of the attrition literature related to institutional characteristics is normative. Drawing from the experience of the Academic Advancement Program at UCLA, Moore, Anderson, and Lynch (1976) suggested 10 approaches to strengthening support services for programs for disadvantaged students. These include (1) calls for feeder consortia with community colleges, high schools, junior high schools; (2) orientation programs designed to meet immediate student concerns; and (3) early detection of possible problems by close and continuous monitoring of progress and performance. Huber (1971) recommended channeling students for greater retention. More specifically, he argued that the institutions with the highest retention rates have most clearly determined their respective missions and have made efforts to recruit students who can best identify with those missions. Institutions should be more willing to accept and more clearly define limited but specific missions according to Kamens's (1971) finding concerning college charter and attrition. This may be one reason that Astin (1975c) found colleges with either Roman Catholic or Protestant affiliations to increase students' probability of graduation. Among the other possible reasons listed by Astin are their close-knit, highly supportive atmosphere and family ties to the values and traditions of the college. Similar reasons may explain Astin's finding that women attending a single-sex school (he did not find this for men) have a better chance of graduating. Concerning the idea of limiting mission, this would seem somewhat foreign to Cope and Hannah's (1975) several policy recommendations on broadening the curriculum to improve retention, reported at the end of part I (pp. 32-33).

Many studies indicate that counseling services can increase persistence. However, as mentioned earlier, most students tend not to use those services. Noel (1976) pointed out that the first six months is a critical period during which the intervention of counseling services can play a decisive role. Kamens (1972) found that Stanford University students who used academic-counseling support services persisted better than those who did not use them. He also reported that those students who used psychiatric counseling services had a greater attrition rate than those who received academic counseling.

Several studies also address the effects of special counseling services on persistence. Schotzinger, Buchanan, and Fahrenback (1976) reported that a special counseling program for commuter students seemed to have increased persistence for that group. Grites (1979) summarized several other studies where special counseling programs were found to improve retention. However, not all specially designed counseling programs report success. Rossmann (1968) found that giving faculty release time for counseling did not affect attrition, GPA, or satisfaction with the college, although students seemed more satisfied with their advisors. Rothman and Leonard (1967) found that a semester-long orientation program did not improve persistence. Johansson and Rossmann (1973) reported that voluntary withdrawers and persisters did not significantly differ with respect to their use of an experimental counseling program. In her survey of 100 deans from across the country, Kesselman (1976a) found that although 95 percent of students consider stopping out at some point in their undergraduate education, only 1 out of 3 seeks advice from professors, and only 1 of 10 seeks advice from counselors. Clearly, the content, organization, and staffing of the program, and the local campus situation, all determine whether such a program will be successful.

Considerable study has been conducted at four-year colleges and universities to determine the effect of student employment and financial aid on attrition. With regard to employment, Astin (1975c) reported that part-time employment correlates positively with persistence—especially when (1) the job is under 25 hours per week, (2) on campus, (3) the student starts such work as a freshman (except for those entering college as married students, where the effect of part-time work is negative), and (4) the student receives minor or no grant or loan support. In addition, students whose off-campus work is closely related to their career goals are more likely to drop out. Astin also found that major support from parents or spouses and participation in federal work-study programs generally increases student persistence. Conversely, except for the case of spouses whose marriage occurs after enrollment, only minor support from parents and spouses generally leads to decreased persistence—possibly indicating ambivalence or resentment on the part of parents or spouses toward the student attending college, an uncertain or low-income situation on their part, or on the student's qualifying for institutional aid. Scholarships and grants increase persistence slightly, a finding that corresponds to Blanchfield's (1971) study that controlled for student ability; this study also found that the amount of the scholarship or grant relates positively to persistence. Nelson (1966) found that percentages of students awarded scholarships are positively related to retention. Reliance on loans generally decreases persistence. Wenc (1977) perceived strong support for the effects of financial aid identified by Astin. However, some studies have found no evidence that financial aid influences persistence (for example, Eckland 1964a; Fields and LeMay 1973; Selby 1973).

Other institutional factors also affect persistence. Astin (1975c), Meyer (1970), Nelson (1972), and Panos and Astin (1968) found that institutional prestige and selectivity are related to persistence. Similarly, Forest (1967) found that selective institutions tend to have better retention, and Trent and Ruyle (1965) found that private institutions tend to have higher retention rates, which corresponds to Beal and Noel's (1979) finding at the two- and four-year levels (see table 1 on page 11).

Kamens's (1971) data suggest that large institutions have geater impact on occupational commitments than do smaller institutions and thus have lower dropout rates for males and for the more able students. He hypothesized that larger institutions have better linkages to the occupational and economic groups in society, which would especially give them more control over the commitments of male students. Conversely, he found no significant relationship between retention for women except that extremely large institutions had higher retention rates. On the other hand Nelson (1966) found that small colleges have better retention than large colleges, presumably because of the personal attention and quality experience they provide. Feldman and Newcomb (1969) and Panos and Astin (1968) concluded from their studies that large, spread-out, impartial campuses have poorer retention. On the other hand, Astin's (1975c) later data and analyses found colleges smaller than 500 students to generally have lower retention, with no upper limit in size affecting retention (other campus factors make the primary difference).

Cope (1972) suggested that students from small high schools persist more successfully at small colleges, and students from large high schools at large colleges. Thayer (1971) implied that minimizing low grades and maximizing high grades can improve retention; the study showed, however, that retention rates did not increase significantly throughout the sixties even though grade inflation on many campuses was purported to be severe.

Although institutional environment has been postulated as affecting attrition, the environment has not been studied closely in community colleges. In a study designed to look at this issue, Jaski (1970) reported that environment had little effect on students in four public Chicago-area community colleges. Strong (1974) examined the impact of class size on the drop-out rate and found little correlation.

The many studies of community-college counseling services on attrition have yielded fairly consistent findings that effective counseling reduces the dropout rate (O'Brian 1967; Davis 1970; MacMillan and Kester 1973; Miami-Dade 1973; Tucker 1973; Aughinbaugh et al.). MacMillan and Kester, in the NORCAL study, provided special counseling services to a test group and none for a control group; they found that persistence in the test group was greater than in the control group. Aughinbaugh et al. (1974) found that the longer the time period between counseling and registration for classes, the higher probability of attrition.

Inadequate counseling services can have a negative effect on students. Davis (1970) reported that many of the dropouts who had negative feelings about their college experiences criticized the counseling service and lack of faculty interest in their work. In light of these findings, it is not surprising that some people advocate upgraded counseling support services. But it is not enough that improved counseling services be made available to students according to O'Brian (1967); colleges need improved ways of inducing students to use the services. Tucker (1973) also called for counseling services to be made available and applied to several needs such as psychological, financial, and vocational counseling.

As in four-year colleges and universities, the amount of time that a student is able to devote to course work would be expected to affect persistence at community colleges. In a sample of more than 34,000 students from 32 community colleges in California, Knoell (1976) discovered that full-time freshmen and transfer students were significantly more persistent than part-time students. A Florida study conducted at Santa Fe Community College (Central Florida Community College Consortium 1973) also indicated that more part-time than full-time students withdraw; in that study, financial reasons were most often cited for the decision to withdraw. Such findings could result from full-time students having more time to devote to their studies. Just as plausible a reason, however, it that the full-time student may have a stronger commitment to attain a degree. Another possible reason is that part-time students tend to work full time off-campus. As reported earlier, Astin (1975c) found that those working more than 25 hours per week, and off campus, had much higher attrition rates. Yet he found those working part time, and particularly on campus, to have improved persistence probabilities. Thus, there is probably a middle ground with respect to the impact on retention of the amount of time the student is able to devote to course work. And even within that middle ground, other factors such as goal commitment and sociability may predominate.

A linking of the characteristics of students and institutions

The preceding discussions reported research that isolated (at least partially) student characteristics from institutional characteristics and described the effects of each on attrition and retention. There do exist major studies other than those reported in the first section that address both groups of characteristics together and that consider the congruity between them. One is the review by Feldman and Newcomb (1969), who conclude that congruence between the needs, interests, and abilities of the student and the demands, rewards, and constraints of the particular college setting explains retention. To Feldman and Newcomb, the major research challenge lies in appropriately differentiating students and institutional environments and then empirically specifying the function that relates these two sets of variables to attrition. The authors felt that, with few exceptions, this had not generally been done.

An empirical study that tried to link characteristics of students and institutions in terms of retention—and apply this information to improving retention—involved 23 community colleges from northern California (MacMillan and Kester 1973). The colleges formed a consortium for research called NORCAL. A three-phase project was designed to address the problem of student attrition among the participating institutions. In Phase I, the project attempted to describe the characteristics associated with attrition among community-college students. Phase II consisted of the development and validation of a model predictive instrument to identify the attrition-prone student. In Phase III, the participating colleges attempted to devise and implement experimental programs to reduce the dropout rate.

Among the primary findings of Phase I were:

1. Dropouts were most likely to be black, least likely to be Oriental
2. Dropouts came from less affluent families and expressed the greatest concerns over matters of finance and employment
3. Dropouts showed less perceived parental encouragement for their pursuit of college
4. Dropouts showed a lower sense of personal importance attached to college
5. Dropouts were likely to have lower educational aspirations than persisters
6. Ability was the key factor for differentiating dropouts and persisters when grouped by sex; low-ability males were three times more likely to drop out than low-ability females

The major findings of Phase I were incorporated into a standardized instrument that could be administered to entering students at any of the community colleges. Several of the institutions conducted experimental design studies that validated the instrument, which, according to MacMillan and Kester, successfully stood the test of three years of use with the NORCAL schools.

Eleven of the NORCAL colleges conducted experimental-design studies that tested the implementation of intervention strategies for improving student retention. The results of every study showed significant improvement in student retention and prompted MacMillan and Kester to assert that "the provision of special services and attention to the high-risk students can cut attrition in half" (p. 47). A common factor in all of the successful experimental programs was one or more variations of individualized or group counseling directed toward the potential dropout. However, only a few of these colleges did anything substantially different in the experimental phase of the study from what any analogous college is presumably providing in terms of resources and personnel. The personnel on this project possibly exerted more energy and had more commitment to the goals of the project than one could expect at a typical college. Admittedly, the NORCAL project dealt solely with high-risk students attending community colleges; given the high predictive validity (68 percent at one institution) of the NORCAL instrument and results that ranged from nominal to astounding, the project should be useful to higher-education institutions in general.

In spite of such remarkable results, however, it should be remembered that the interactions within each side of the formula (student characteristics and environmental characteristics) are extremely complex, as are the interactions between student characteristics and the environment. In response to the multitude of interacting factors on each side and the complexity of interactions in all directions, Spady (1970) had to admit that "since no one theoretical model or research design could possibly systematize or operationalize the specific relationships among all of the variables..., we do not attempt the absurd" (p. 77).

But if research is based on meaningful congruence theory, and multiple student and institutional factors are considered in dynamic interaction, the understanding of attrition and retention can be usefully enhanced.

6

Classifying Retention

In a thought provoking article, Hoyt (1978) stated that "the problem of attrition must be reconceptualized if we wish attrition research to become more accurate and more useful" (p. 27). As he reviewed the different types of attrition studies, he noted:

> A small number of studies have addressed the problem of matching student and college characteristics. These studies, too, have been largely unproductive, in part *because we lack defensible taxonomies to guide our choice of characteristics.* [Italics ours.] Are the most meaningful variables the ones that can be most easily assessed (size, affluence, type of control, location, complexity, selectivity)? Or would difficult-to-assess variables like "faculty commitment to teaching," "concern for personal values," "vocational emphasis," or "academic standards" be more valuable? In addition, it is not altogether clear what is to be matched—the student with other students in the living group, with students in general, with students in the same curriculum, or with faculty members? [P. 78]

As Hoyt suggests, organizing information about retention and attrition into meaningful categories and subcategories can conceivably add understanding to what we know about retention and generate hypotheses for study. In fact, a number of previous attempts to develop such a useful classification system have been made. Following a review of those previous attempts found in the literature, this section will present a proposed classification.

Previous Attempts

In response to his expressed need for a "defensible taxonomy," Hoyt formulated a classification system based on concepts of satisfaction and commitment. He started out by questioning the current focus in attrition research and by suggesting six general assumptions about attrition:

> The disappointing status of the knowledge and understanding produced by attrition research undoubtedly reflects the large number of relevant variables, their complexity and their interdependence. But it is the thesis of this paper that we may also be asking the wrong questions. To clarify this possibility, let me suggest a series of general tenable assumptions.
>
> - Persisting in college represents a choice that is available to most students...
> - Persistence will be chosen when satisfactions (both realized and anticipated) associated with it exceed those associated with any other choice...
> - Lacking satisfaction in a given situation, individuals will "experiment" with alternative choices and select one that is judged to have the highest probability of providing satisfaction...
> - Satisfaction arises from two sources: a sense of progress (including expected progress) in reaching personal goals and a sense of comfort with the environment (acceptance, security, freedom from pressure)...
> - Enduring satisfactions (sound choices) require support from both sources of satisfaction...
> - The process of finding satisfaction is threatened by barriers that, in theory, can be removed...
>
> The propositions just offered, rather than focusing on improving retention, suggest that the central problem is one of maximizing satisfaction with choices. Further, they suggest a variety of specific questions which have seldom been addressed in attrition research. *How are personal goals developed and identified?... What types of services or programs will respond meaningfully to the goals?... How can personal goals and institutional programs be optimally articulated?... What types of environmental comfort does the institution offer?* [Pp. 78-80]

Hoyt's persuasive logic and propositions help explicate the multifaceted student and environment interaction model discussed earlier. After discussing his relevant assumptions and questions in some detail, Hoyt presented a longitudinal data-collection plan that follows from those assumptions. Then he presented a taxonomy of attrition types to guide an assessment of satisfaction and commitment. This taxonomy (figure 7) is the only multilayered complex classification system for retention and attrition that was found in the literature. The basic purpose of Hoyt's taxonomy is to have categories that will allow one to identify appropriate measures, group the measures according to the time and place they should be administered, and suggest data comparisons and interpretations.

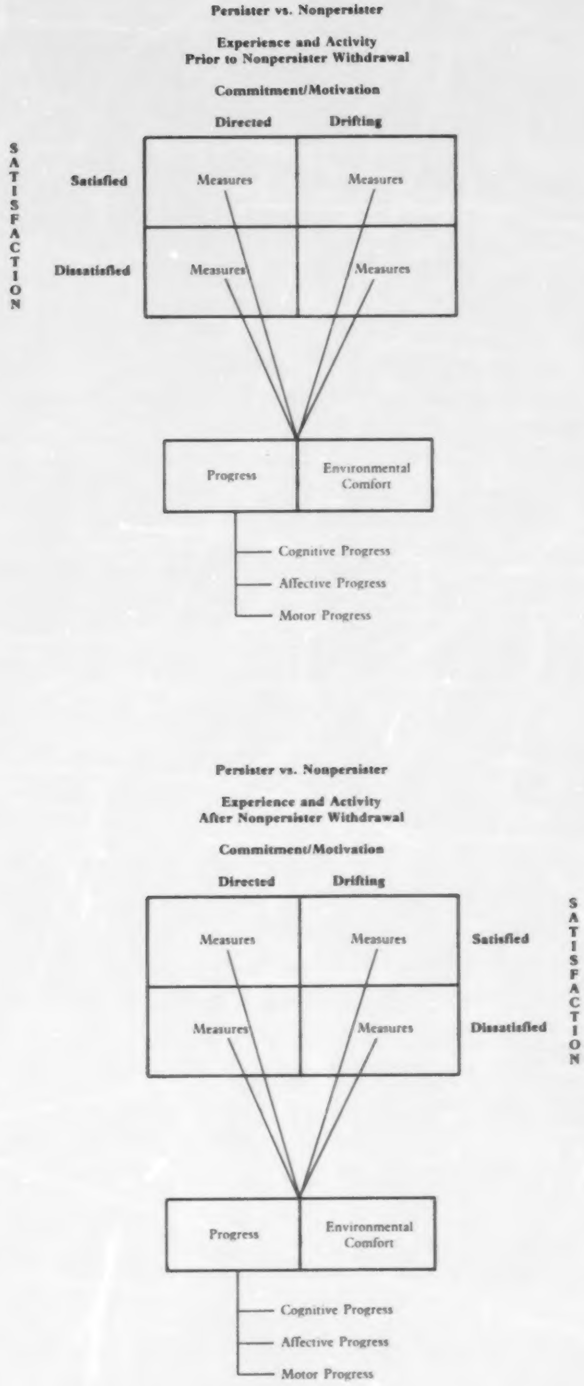

Fig. 7. An interpretation of Hoyt's (1978) taxonomy of attrition types

Although no one else has attempted to develop a complex taxonomy of retention and attrition types, others have classified such outcomes. Some simple but useful distinctions have been made. One is a differentiation according to the retention and attrition definitions (on-time graduation, sometime graduation, term or course completion, and personal goal attainment). That differentiation was developed by community-college administrators and by researchers such as Cope and Hannah (1975), Pantages and Creedon (1978), Haagen (1977), and Bossen and Burnett (1970).

Separating dropouts, as Iffert (United States Department of Health, Education, and Welfare 1957) did in his large-scale study, into those who drop out permanently and those who enter other institutions, is desirable. Therefore the on-time and sometime categories could be subdivided into *graduation from initial institution and graduation from another institution.*

Strictly attrition-oriented categories include *voluntary* (leaving in spite of not having failed to meet the college's requirements) and *involuntary* (leaving because of failure to meet the college's academic or conduct requirements). Rootman (1972) and a number of others provided plausible rationales about the importance of such distinctions in retention studies. Grouping into voluntary dropouts and forced dropouts, or those who drop out because of poor grades and for reasons other than academic failure, are variations suggested by Rose and Elton (1966), Rossmann and Kirk (1970), Johansson and Rossmann (1973), and Starr, Betz, and Menne (1972). As reported earlier, Rose and Elton found personality traits that differentiated their following four categories of dropouts: successful persisters, probation persisters, defaulters (GPA failures), and dropouts (voluntary attrition). Pantages and Creedon (1978) criticized such groupings, however, contending that the factors causing poor academic performance, not the poor grades per se, are the reasons for dropping out. Perhaps one should subgroup according to the stated reasons for dropping out and then identify the underlying factors.

A number of variations on the voluntary versus involuntary theme have been proposed. Cope and Hewitt (1969) used the terms *discretionary* and *nondiscretionary.* They included reasons such as "withdrew because mother is sick" and "withdrew to have a baby" as implying nondiscretionary, or involuntary, attrition. Most others have only included college-initiated withdrawal in that category. Pervin and Rubin (1967) used the terms *academic* and *nonacademic.* Vaughn (1968) and Bean and Covert (1973) called them *withdrawals* and *dismissals.*

Others have expanded the number of categories on this dimension. Hackman and Dysinger (1970) developed a four-category version that is based on the severity of the problems students experience in college. They found that the magnitude of problems leading to attrition differed according to type of dropout: *academic dismissals* had the most severe problems, *voluntary withdrawals not transferring* had less severe problems, *those transferring to other institutions* had still less severe problems, and *persisters* had the least severe problems. However, they concluded that dropouts should not be considered homogeneous groups in terms of reasons for withdrawal or of subsequent attitudes. Zaccaria and Creaser (1971) also split the voluntary versus involuntary dimension into four categories: *graduates, achieving withdrawals, nonachieving withdrawals,* and *failures*. Terry (1972) formulated a set that included *graduates* (graduated in the program and institution in which they started), *persisters* (completed the certificate, diploma, or degree in another program at the same institution or in any program at a second institution), and *dropouts*.

Although the percentage of voluntary dropouts undoubtedly varies for different colleges and different categories of students (Tinto and Cullen 1973; Jaffe and Adams 1970), voluntary dropouts are common at all types of colleges. Chickering and Hannah (1969) found that most of their dropouts at small four-year liberal-arts colleges withdrew voluntarily; out of 40 undergraduate dropouts studied in-depth at Yale (Hirsch and Keniston 1971), none had to withdraw for academic, disciplinary, or medical reasons; 45 percent of the freshman dropouts in 1966 at the University of California at Berkeley withdrew voluntarily (Rossmann and Kirk 1970); and half of the male dropouts and 80 percent of the female dropouts at Macalester College were voluntary (Johansson and Rossmann 1973).

Barger and Hall (1964) discussed a related dimension, the time of dropout during the term. Data from an ongoing exit-interview system at the University of Florida suggested that the dropouts could be meaningfully classified into *early dropouts* (dropping out prior to the eleventh week of the trimester) and *late dropouts* (dropping out after the tenth week of the trimester). The reasons given for dropping out varied for the two groups, with early dropouts tending to give financial, dissatisfaction, motivational, and other personal reasons more than late dropouts, who mostly reported academic reasons. Barger and Hall also found that the late dropout group was composed mostly of students who were failing academically, although most members of the late dropout groups were carrying a lighter academic load than the early dropout group.

Another possible temporal typology involves the year in school during which the dropout occurs. This typology is suggested by the many studies that have found that the majority of dropouts occurs during the freshman year and that freshman-year dropouts have different characteristics and tend to give different reasons for dropping out than those who drop out in later years. Sexton (1965) found that academic reasons and unwillingness to adapt predominate in the later undergraduate years.

Other findings of Sexton (1965) support a classification system that combines year of dropout with whether dropout occurs early, middle, or late in the term. She found that the number of dropouts declines with each succeeding year and that the beginning and ending of the term have larger percentages of withdrawals than the middle of the term.

Still another approach to classifying dropout types is one used by Cope and Hewitt (1969; 1971) to develop what they called a typology of college dropouts. Using factor analysis and focusing on a college of arts and sciences at a large university, they found evidence that both students and institutions can be categorized as socially oriented, academically oriented, family oriented, and religiously oriented. They also formulated an other-oriented student category that was closely related to the family-oriented category. Cope and Hannah (1975) suggest that negative reactions to one or more of the four environmental press[7] types can result in withdrawal.

A final type of classification involves grouping according to factors related to retention and attrition. Alfred's (1974) 15 genetic factors, 16 internal factors, and 21 external factors, referred to earlier, are one example. Another example consists of the Flannery et al. (1973) listings of society, student, and college factors in Figure 5 on page 48.

A Proposed Classification Structure

From the foregoing consideration of previous attempts to classify retention and attrition, and from a review of the theoretical and research literature, a proposed structure for retention and attrition was developed (figure 8). This typology is more comprehensive and potentially more useful than any of the previous retention or attrition structures that were reviewed; it also provides a picture of retention and attrition that can be conceptually meaningful and stimulating to both educational researchers and practitioners. In addition, it can logically serve as a substructure of the NCHEMS Outcomes Structure, discussed on pages 41-42.

Nine criteria were used to develop this proposed typology. These are the same as those that were derived from the taxonomic literature to develop the NCHEMS Outcomes Structure (Lenning et al. 1977, pp. 33-38).

1. *Practical utility.* Theoretical constructs often remain vague, unsubstantiated, and difficult to study because they have not been subdivided into concrete and precise categories. This is true also of retention and attrition as concepts. Much of the research reported in the literature was not specific about the type of retention or attrition under consideration and failed to acknowledge different types. Similarly, administrators in higher education often fail to recognize different types of retention and attrition, even though an understanding of these could be helpful to them. The eight different types exemplified in figure 8 (row 3) are each concrete and clearly distinguished from one another. Furthermore, combining each type of attrition with each condition given in row 1—such as whether each was voluntary, requested by the college, or otherwise involuntary—results in 24 distinct categories of attrition, and the two volition categories for retention result in 16 retention categories. Furthermore, focusing on the time of attrition provides added differentiation that research clearly indicates is relevant. Finally, discrepancies or congruencies between students or student expectations and realities in their academic and personal lives at the college add still other distinctive yet interrelated

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[7] For a definition of environmental press, see page 56.

dimensions that theory and research suggest are important. That is, the interaction between student and college is crucial to retention and attrition. For example, even personal problems, such as those discussed by Bard (1969), can be interpreted as a discrepancy between what the student needs from the college in order to stay and what the college is able to provide. Within each category of row 4 are many potential subcategories that remain to be sorted out.

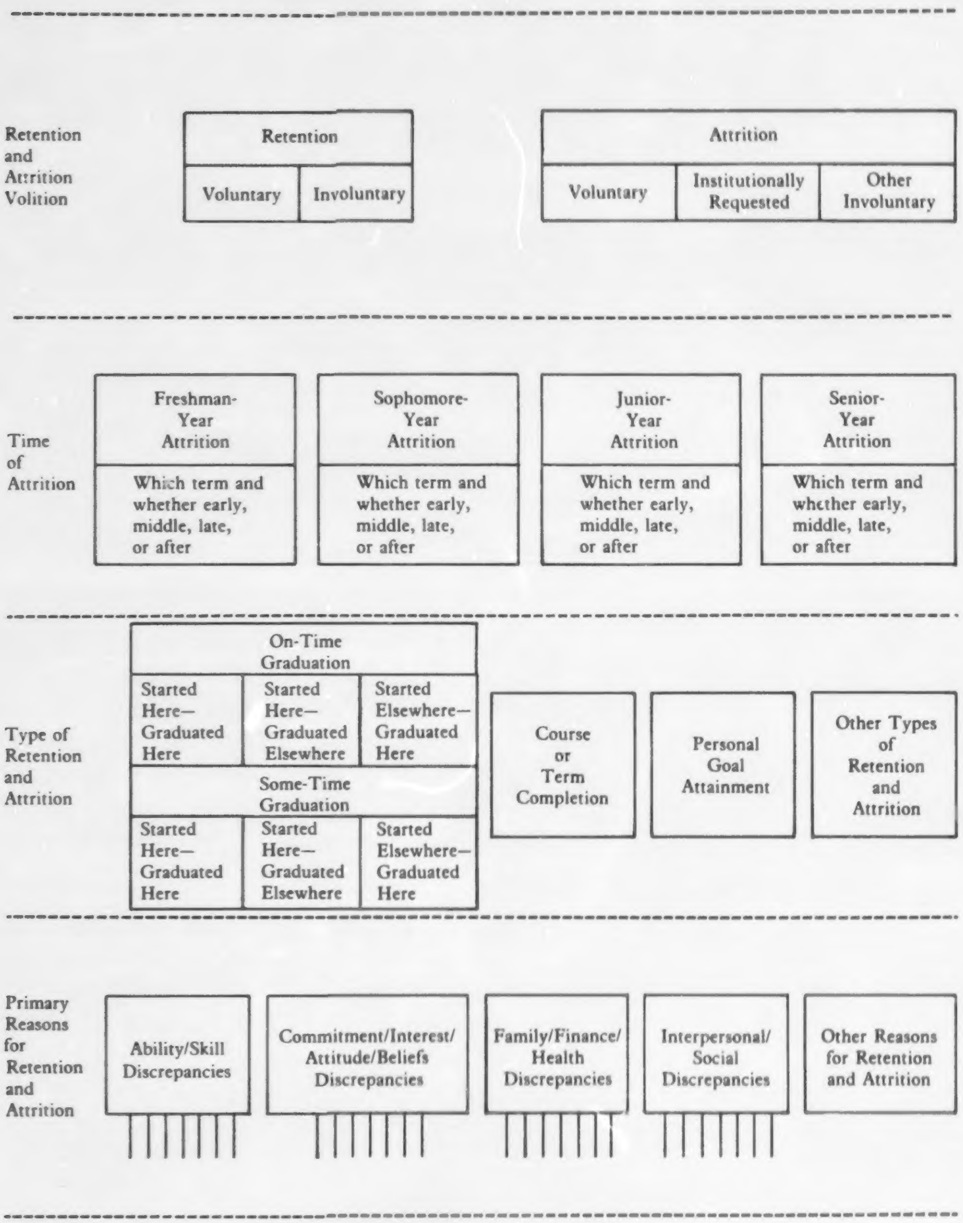
Retention and Attrition Volition
Retention
Voluntary
Involuntary
Attrition
Voluntary
Institutionally Requested
Other Involuntary
Time of Attrition
Freshman-Year Attrition
Which term and whether early, middle, late, or after
Sophomore-Year Attrition
Which term and whether early, middle, late, or after
Junior-Year Attrition
Which term and whether early, middle, late, or after
Senior-Year Attrition
Which term and whether early, middle, late, or after
Type of Retention and Attrition
On-Time Graduation
Started Here—Graduated Here
Started Here—Graduated Elsewhere
Started Elsewhere—Graduated Here
Some-Time Graduation
Started Here—Graduated Here
Started Here—Graduated Elsewhere
Started Elsewhere—Graduated Here
Course or Term Completion
Personal Goal Attainment
Other Types of Retention and Attrition
Primary Reasons for Retention and Attrition
Ability/Skill Discrepancies
Commitment/Interest/Attitude/Beliefs Discrepancies
Family/Finance/Health Discrepancies
Interpersonal/Social Discrepancies
Other Reasons for Retention and Attrition

Fig. 8. A proposed structure for retention and attrition

Such a large number of distinctive retention and attrition categories as outlined above in figure 8 would logically serve as useful organizers for storing findings about retention and attrition (and information about relevant measures and indicators) in an information storage and retrieval system. Such categories can also logically assist institutions, program planners, managers, faculty, and researchers to communicate more consistently and clearly about retention and attrition, among themselves and with others (including students) both inside and outside the institution. In addition, the structure presented can conceivably show relationships among the types of retention and attrition—and information, correlates, or other factors linked to each—that could stimulate thinking about research priorities among researchers and about possible ways to improve retention for institutional managers and other practitioners. While such application and use of this structure has yet to be tested, reviewers have generally acknowledged its merits.

2. *Congruence with decisionmaking tools.* The vocabulary used in this structure is consistent with most administrative decisionmaking handbooks on retention and attrition, such as the Council for the Advancement of Small Colleges' (1978) *Users Manual for the Student Attrition Module*, Bader's (1978) *Retention of Students: A Resource Manual*, and the NCHEMS *Manual for Conducting Attrition Studies* (Patrick, Myers, and Van Dusen 1979). Also, since the organization of the structure does not conflict with what is presented as retention and attrition in these handbooks, it can be used to supplement them.

3. *Comprehensiveness.* Most or all retention and attrition outcomes noted in the literature (other than the consequences of retention and attrition, which are covered by other sections of the NCHEMS Outcomes Structure) can be placed into this structure. An example of retention- or attrition-induced outcomes that do not have to be covered by this structure is economic impacts in students' lives; these are covered by the economic outcomes section of the Outcomes Structure. Similarly, the effect of retention and attrition on student self-concept, self-confidence, values, skills and competencies, and perceptions of others are covered by other categories within the human characteristics outcomes section of the Outcomes Structure.

4. *Absence of overlap.* Conceptually, the categories are as distinctive and mutually exclusive as one could expect in a typology of this kind. On the other hand, it is sometimes difficult to distinguish between voluntary and involuntary reasons or acts (for example, one person might classify dropping out because of a death in the family as "involuntary" while another would consider it "voluntary"). Likewise, one person might accept reasons as reported by students at face value while another might perceive some different underlying reason. Furthermore, if a student's goal is to start at one college and graduate from there in four years, the accomplishment of that goal fits accurately into both the "personal goal attainment" and the "started here, graduated here, on time" categories within "type of retention and attrition" (row 3, figure 8). None of these minor overlap problems, however, should be serious obstacles to using the structure. For example, if the definition of

personal goal attainment set forth in part I is used, the personal goals of graduation and course or term completion are specifically excluded from this category.

5. *Reliability.* Clear-cut categories, logically ordered subdivisions, and consistency in meaning across classes are necessary for reliability and consistency in classification, and these have already been inferred from the structure. However, as noted in the discussion concerning the "absence of overlap" criterion, there are some unavoidable possibilities for inconsistency in the classification rating of independent judges. After discussion, they could probably agree, however.

6. *Neutrality.* For the structure to be generically neutral, its categories and classes must either form a logical progression that attaches no value to placement or occur in random order (for example, alphabetically) with class terms also as neutral as possible. In row 1 of figure 8, however, "retention" is listed before "attrition" for a value-laden reason—that the more positive focus should come first. The same is true of the "voluntary" and "involuntary" distinctions in that same row. On the other hand, the categories in row 2 are listed in a logical time-related sequence, and those in row 3 according to the amount of attention currently devoted to them in the literature. The categories in row 4 of figure 8 are listed alphabetically, except for "other," which logically comes last. The order of the rows to one another is alphabetical for the first three rows, with "primary reasons" being placed at the base of the diagram because the underlying reason for attrition or retention is foundational.

For "type of retention and attrition" categories and subcategories (row 3), the terms *graduation, completion,* and *attainment* may suggest only retention. Each, however, refers also to a failure to graduate, complete, or attain.

7. *Hierarchy.* All classes, and all subdivisions for each class, must pertain to one another in a meaningful manner that is hierarchical. The structure meets this criterion in two respects. Except for the "time of attrition" categories, which pertain only to the three attrition categories in the level above them, any category or subcategory in row 1 can be divided by any category or subcategory of rows 2, 3 and 4; similarly, any category or subcategory of row 3 may be divided by any of those in row 4. Furthermore, within all four levels, each category has specific subcategories that relate to it in a hierarchical manner.

8. *Reality.* For this criterion to be met, the most important or essential actual relationship among the different types of retention and attrition observed in the "real world" should be made apparent by the relationships among the classes and subdivisions of the structure. Our knowledge is far from complete, and retention and attrition phenomena are very complex, but the relationships in this structure are believed to correspond to relationships apparent thus far in the research literature.

The four "primary-reason" categories in row 4 resulted from an attempt to combine seven factors found by Cope and Hewitt (1971), which were grouped as:

1. Ability and skill discrepancies (academic factor)

2. Commitment, interest, and attitude discrepancies (academic and religious factors)
3. Interpersonal and social discrepancies (social and fraternity factors)
4. Family, finance, and health discrepancies (discipline, family, and finance factors)

Within each of these four categories, a congruence discrepancy of some amount exists between the expectations, characteristics, and goals of the student and those of the institution.

9. *Flexibility.* To meet this criterion, the structure should be relevant to the needs of all potential users in different contexts. For example, it should provide retention information about a program for prospective students as well as for researchers, administrators, and faculty—and it should be easily adaptable to changes in context. As discussed under the first criterion, practical utility, the structure can be useful for all of these groups. In addition, it is adaptable in that any level can be bypassed and subcategories can be used or not used as desirable and meaningful. Furthermore, the "other" categories for certain classes allow one to categorize information—or measures and indicators—that do not readily fit into the specific categories provided for that class. An example for row 4 would be accidental occurrences at the institution that lead to retention or attrition.

7

Measures and Indicators of Retention and Attrition

Unlike other works found in the literature on retention and attrition, this will examine different types of potential measures and indicators of retention and refer to evidence of their validity, reliability, and usefulness. However, before measures and indicators of retention are separately discussed, a word should be said about Terenzini's (1978) evaluation of basic survey designs for studying retention and attrition. His focus was on single-institution studies, but he concluded that adapting to larger systems is a matter of scale rather than conception. Table 4, which summarizes what Terenzini concluded from each design, has been reproduced from the report. Of the table, he notes:

> "Instrument Reliability" and "Instrument Validity," listed under Research Considerations, are clearly more matters of measurement than of design. Choice of a design neither precludes nor guarantees adequate instrumentation, and the quality of a measure is more closely related to the knowledge and skill of the researcher than to the design selected. They are included nonetheless because they are important considerations in any research. [P. 3]

Clarification about Terenzini's use of the terms *reliability, validity,* and *measurement* should be made. In personal correspondence, he indicated that these terms were to be understood in a psychometric rather than in a definitional sense (as in differentiating "stopout" from "permanent dropout").

As Terenzini acknowledges, collecting retention and attrition information should often involve other than questionnaire surveys. In-person and telephone

TABLE 4

SUMMARY EVALUATION OF THREE DESIGNS FOR STUDYING ATTRITION

Consideration	Autopsy Studies	Cross-Sectional Studies	Longitudinal Studies
Research Considerations: (Benefits)			
Instrument Reliability[a]	Probably Limited	Possible	Possible
Instrument Validity[a]	Probably Limited	Possible	Possible
Likely Response Rates	15-40%	55-80%	40-60%[b]
Sample Representativeness	Unlikely	More Likely	More Likely
Internal Validity			
a) Comparisons with Non-dropouts	No	Yes	Yes
b) Controls for Initial Group Differences	No	Limited[c]	Yes
Analytical Procedures	Usually Descriptive or Bivariate	Bivariate or Multivariate	Multivariate
Planning Considerations: (Costs)			
Needed Training/Experience of Project Staff	Minimal	Moderate to Advanced	Advanced
Time to Complete Study	3-5 mos.	6-9 mos.	15 mos.
Direct Costs (Relatively)	Low	Low-Moderate[d]	High[d]
Planning Needed	Limited	Limited-Moderate	Considerable
Applicability of Data to Other Purposes	None-Limited	Moderate-High	Moderate-High
Data Management Problems and Requirements	Few	Few-Moderate	Moderate-Many

SOURCE: Reprinted from Terenzini (1978).

a. Depends more on the training and skill of the person(s) designing the study than on the design adopted.

b. Response rates, expressed as proportions of an initial sample, decline with each subsequent data collection.

c. Assumes that the only pre-college information available for study respondents is that typically collected at time of application for admissions (sex, academic aptitude, percentile rank in high-school class, but not including educational aspirations or goals, commitment to completing a degree, personality characteristics, and similar information).

d. Costs may be reduced considerably if an institution regularly collects extensive pre-college data through such programs as the Cooperative Institutional Research Program (UCLA- and ACE-sponsored) or the ACT Assessment Program.

interviews are also often economically feasible and can be very effective ways of collecting such information. For example, Kegan (1978), who discussed one study of long-term dropouts at Hampshire College, pointed out that though the study involved interviewer and telephone costs of less than $350, it had a major impact on the College. The study reportedly helped administrators correct campus misperceptions about the College's attrition rate and understand the reason for student attrition: social isolation and quality of student life. In response to the findings, a formal retention program was instituted. There are, as well, almost 50 additional ways of collecting data identified by Lenning (1978), some of which are modifications of the standard interview technique.

A major problem in conducting retention and attrition studies at many colleges is keeping track of the students as they persist, drop out, or stop out. California State University at Northridge developed a solution to this problem that has been proved in practice (Newlon and Gaither, in press). This is an enrollment-projection model that records each cohort of entering students and follows them through their college careers, by student and by student group. It discerns when a student leaves and returns. Furthermore, it can extract student subsets and also follow their progress as a unique group. For example, persistence rates of those who entered as freshmen can be compared to those who transferred in; veterans can be compared to nonveterans; and student retention in one student major can be compared to other majors. For each cohort group, comparisons can also be made between persisting and nonpersisting students. Researchers or administrators also use attrition figures in making enrollment projections and in determining the number of students to admit to programs for which there are graduation ceilings. Another example of an institutional tracking system is that which Tilton (1979) described at Florida State University. This system was developed specifically to support a study of the persistence of black students, but it can also be used to monitor changes in retention on a regular basis, to assess the impact of policy and program changes on retention, and to develop prediction models.

Analyzing the data is another important concern. Because attrition is such a complex phenomenon, multivariate analysis will often be needed. Analysis methods that are especially designed for sorting out complex arrays, such as path analysis (Bean 1979) and fault-tree analysis, should be considered.

Feasibility in terms of staff expertise, costs, and expected cost-benefit ratios has been referred to earlier in this introduction to the section. Cost feasibility as it applies to resources available for the study and expected benefits in relation to projected costs is an important topic that deserves primary consideration. Discussion of this topic, however, will be given in the concluding section (pp. 99-100).

A word should also be said here about the difference between a measure and an indicator. Some educators have more or less equated measures with indicators, perceiving both of them as referring to a continuum of measurement varying from extremely reliable, valid, and accurate to gross, approximate, and merely suggestive in terms of accuracy. We find this intuitively appealing, but many other educators mean "highly accurate, reliable, and valid" when they refer to an educational *measure.* As a result, educators in the first group who developed relatively invalid and unreliable standardized instruments referred to them as measures. In turn, many educators in the second group made unwarranted assumptions about the accuracy, reliability, and validity of those instruments—strictly because they were referred to as measures—and interpreted or applied them accordingly. To avoid such confusion, it is necessary to differentiate between "measures" and "indicators."

Measures provide precise, concrete information showing amount; indicators give imprecise evidence from which one can hypothesize presence, direction, and estimates of amount. An indicator consists of observations that suggest that a particular condition exists. Changes in the gross national product, for example, indicate the financial health of the nation, and the Dow Jones Industrial Average is used as an indicator for events in the stock market. Science indicators are used to suggest the state of scientific research and development, and social indicators attempt to evaluate the quality of life in a community or society. An indicator, unlike a measure, does not provide a standard against which one can accurately determine dimensions, although it may suggest that a variable is present, and it may lead to gross estimates of dimension. Scores on psychometric scales and other instruments purporting to measure constructs—such as the need for achievement—generally have less reliability and validity than is desirable for use with individual students, and they are more accurately referred to as indicators than as measures.

Measures of Retention and Attrition

In-depth study of the issues related to measuring attrition and retention have been neglected far too long. While the major focus for the other types of educational outcomes has been on measurement and measurement problems, the major focus for retention and attrition has been on correlates. Unlike other types of student outcomes, such as academic achievements, no standardized measurement instruments exist for retention and attrition. However, a few carefully designed attrition questionnaires have been created to administer to dropouts (see, for example, American College Testing Program 1979; Council for the Advancement of Small Colleges 1978; Patrick, Myers, and Van Dusen 1979). Measuring the amount or extent of retention and attrition is related to the definitions for the type of retention and attrition being measured. (Those definitions are presented on pages 38-41.)

MEASURES OF GRADUATION AND PROGRAM COMPLETION

There are a number of different graduation and program-completion measures, as well as variations for each. Perhaps the one used most often is the percentage of students obtaining a bachelor's degree in four years. Cope and Hannah (1975) note that from 1930 until the 1970s, the percentage of all entering students obtaining a baccalaureate degree in four years has remained steady at about 40 percent. They also report that reliable data for students completing their programs on schedule in community colleges is difficult to find because the data are not readily available.

Inasmuch as some baccalaureate programs today are designed to be completed in five years, and many community-college programs are designed to be completed in less than two, the measure should be defined in terms of given completion time for which the program is designed rather than specifying two years for community colleges and the traditional four years for others. Students who complete programs or degrees in the expected amount of time should be included in totals for both the type of college and particular program involved.

Another—and perhaps more useful—measure is related to time of completion irrespective of the length of time required of students to complete the program or to graduate. A great many variations of this measure are possible:

1. Of Students completing a degree or certificate who started in a program at an institution in a particular year, the number and percentage of those who took various amounts of time to complete the program
2. The number and percentage of students in a designated entering class who earned a degree or certificate from an institution within a designated time, by type of degree or certificate, student status at entrance, and student program
3. Amount of time required for a student in a particular graduating class to earn a degree or certificate, by degree or certificate type, student major program, and student status at entrance
4. Amount of time required for students in a particular entering class who eventually persist to earn a degree or certificate, by degree or certificate type, student major program, and student status at entrance
5. Number and percentage of students who entered as transfer students earning a degree or certificate during a certain period of time, by status at entrance

Assuming that the record storage system is reliable, data for these measures can be readily collected from institutional records. Discussion of the validity and usefulness of such information to institutional decisionmakers, however, is missing in the literature. It would appear that using several of these measures together would provide a better picture of attrition and persistence on campus than would any one in isolation. Similarly, a detailed subgrouping by various student and program factors could make the picture clearer (improve validity), but such efforts would require working with more complex data.

Especially valuable are longitudinal studies that follow students through their college careers to ascertain whether they graduate, transfer and graduate, stop out and graduate, stop out but never earn a degree, or drop out permanently (where permanently might be defined as 10 years or more after entrance). Questionnaires and personal interviews are feasible ways of gathering such data. Data can be about individual institutions, groups of institutions, or postsecondary education as a whole. Although Pantages and Creedon (1978) advise against combining attrition data from different institutions because of the variations among institutions, many respected attrition studies have successfully done so. Based on results of longitudinal studies by Eckland (1964a) and Trent and Ruyle (1965), Pantages and Creedon (1978) recommended that such studies "incorporate both a definite unambiguous operational definition of 'dropout' and a longitudinal design of ten years" (p. 56). Such studies should also examine the sexes separately.

One plausible and useful measure of this "sometime" definition of graduation is the percentage of students by program who enter college at a particular time and graduate within 10 years. Other related measures within such a time frame are the percentage of students who (1) change major and graduate, (2) stop out and later graduate, (3) change institutions and graduate, and (4) change both institution and program and graduate. Astin (1975c) suggests a procedure for making any of these measures more valid: to eliminate all entering students who do not intend to graduate, based on results of a questionnaire that asks degree aspirations. Thus Astin's measure was the number and percentage of "students who had originally planned to earn a bachelor's degree but who subsequently failed to do so" (p. 6). Of course, it must be remembered that during their college attendance students do change their aspirations, and in both directions; Astin's procedure cannot control for such students.

The only source in the literature that focuses on the reliability, validity, and usefulness of retention and attrition measures is the student-attrition manual developed by the Council for the Advancement of Small Colleges (1978). It points out that the data needed for these measures are usually available in a registrar's office and include such statistics as the number of full-time freshmen, transfer students, and other students entering and leaving during particular times. The manual also provides report formats for retention and attrition by class and year—as a percentage of entering freshmen by class and of students in the class at the beginning of the class year. (Similar formats could usefully be developed within each of these categories according to such factors as entering college goal, sex of student, student transfer status, student background and personal characteristics, reason for dropping out, nature of dropout—voluntary or involuntary—and so forth.) If such retention and attrition statistics are collected annually, colleges can develop multiyear average measures and examine year-to-year changes in retention and attrition. Such data can indicate the relative success of a school's efforts to improve retention.

Retention statistics for analogous colleges or groups of colleges can be helpful in interpreting one's own statistics. Not only can such statistics provide a benchmark against which to judge local retention-program success, but they will also help to control for social factors that affect retention rates. For example, in addition to differing by type of student and college, and by different colleges of a similar type, the percentage of voluntary dropouts has changed with time (College Research

Center 1972). One possible reason is that grading standards *may* have become increasingly relaxed at many institutions over the past decade, as reported earlier. (As proposed by Lorang [1978] in his review of the literature on "grade inflation," the general increase in college grades reported at many institutions could perhaps be caused by an increase in teaching effectiveness rather than relaxed academic standards.) Another is that historic issues, like the war in Vietnam, can affect dropout rates and students' reasons for dropping. Fenstemacher (1973) writes:

> Many of the attrition studies during the last twenty years indicated that both men and women frequently cited dissatisfaction with the college environment, lack of interest in studies, uncertain academic major and undefined career plans as motives underlying the decision to withdraw. The major difference between two studies performed during the 1950s (Iffert, 1957; Slocum, 1956) and a study in the 1970s (Astin and Panos, 1969) is that the students in the later study were withdrawing more for reasons of dissatisfaction with the college environment and unsettled personal interests and goals. Over the past 15 to 20 years, there appears to be an increasing tendency to cite personal factors related to dropping out—a lack of fit between the student and the institutional environment, and undefined personal objectives. This suggests that students today, in comparison with the students in the 1950s, are more concerned with the relevance of education to their personal growth and development. [P. 191]

Each measure of retention has its own degree of validity and reliability.[8] The reliability and validity of percentage indices depend largely on how carefully one has specified the total base population as well as the populations of dropouts and persisters, and on how carefully and accurately one has counted. The pattern of various relevant measures provides a more valid and reliable picture of retention than any single measure by itself.

MEASURES OF TERM OR COURSE COMPLETION

Percentages of entering students who complete or drop out of a particular course or term constitute another relevant measure of retention and attrition. Data for these measures can also be obtained from a registrar's office.

In addition to developing these measures separately for each term and for selected courses, one can include the percentage for the total year of students who entered a term and completed it, as well as students who entered and completed courses. Percentages are potentially more useful measures when separated by sex, student type, college goal, instructors teaching the course, and so forth. However, the data preparation and analysis can get so detailed and complex (in terms of data array) that the task becomes cumbersome. Too much subgrouping could also result in sample sizes that are smaller than desirable. The number of categories

[8] *Validity* refers to the extent that a test, study, or index measures what it was intended to measure and whether the data are meaningful, clear in their implications, and accurately descriptive of the actual situation. *Reliability*, on the other hand, refers to accuracy and consistency of data across points in time and populations gathered by the measure.

desired depends on the local situation and the applications to which the data are to be put (for example, how many categories the researcher can keep track of easily, whether or not statistical tests will be used, and what variables seem important in differentiating students and their teachers).

MEASURES OF PERSONAL GOAL ATTAINMENT

If graduation percentages are based only on students intending to graduate, each percentage can be a valid and reliable measure of the attainment of that personal goal. The key to having valid, reliable, and useful measures of personal-goal attainment is to identify carefully the goals of entering students and to monitor goal changes periodically as students proceed through their college careers—as well as whether or when students' goals are realized. Survey questionnaires or interviews, or both, have generally been used to classify students by goals, but often the terminology is not specific enough to differentiate reliably among students according to their goals and goal achievement.

Additional problems emerge when this type of retention and attrition is measured. First, many students enter college with multiple goals, which may or may not be fulfilled, and students have different levels of fulfillment. Second, after recognizing that their expectations about college were not completely accurate, some students change their goals after entrance or from time to time as they progress through college. (It might logically be expected that this would be especially true of the traditional 18- to 22-year-old entering age group.) Thus, those who originally plan not to graduate may decide to do so after all, and vice versa. Others may want merely to acquire some limited skill or knowledge, or status (such as marriage or a secure job), and never intend to pursue a degree or certificate.

Indicators of Retention and Attrition

Indicators examine the correlation between the criterion of concern and various other factors. If a pattern of characteristics usually correlates positively with retention and negatively with attrition for particular types of students in certain kinds of institutions and programs, this pattern can be considered an indicator of retention for such students, institutions, and programs. (The higher the correlation, the more valid the indicator is usually thought to be.) It may also indicate one or more of the causes of retention or attrition for those types of students, programs, or institutions. It is virtually impossible, however, to conclusively show causal links between attrition and retention and the several variables that have been studied. Experimentally and empirically controlled studies are not only difficult to design (and could be considered unethical in many cases) but also tend to introduce artificial factors that change the situation and make it unreal. Such experiments may turn a complex and multifaceted interactive situation into one that is overly simple and therefore not representative.

REPORTED REASONS FOR DROPPING OUT

Literally thousands of dropout studies have been conducted at colleges and universities, and most of them consisted of asking former students why they dropped out. While the specific reasons given for withdrawal vary, these may be grouped into a few categories.

Many educators consider lack of ability and low grades as the most common reason for dropping out of college, and it is true that an appreciable number of students each year are asked to leave school because they have not maintained the required GPA. But the majority of students have withdrawn voluntarily, according to a large-scale study reported by Panos and Astin (1968), and grading standards at many colleges have purportedly been relaxed appreciably since those data were collected. Based on a weighted sample of 30,570 students who entered 248 accredited four-year colleges in 1961, Panos and Astin found that 35 percent had permanently dropped out of school within four years after matriculation and another 9 percent had dropped out temporarily. Of these dropouts, 74.7 percent had withdrawn voluntarily. In a later study of dropouts who had entered college in 1966, Astin (1972a) found that at four-year colleges, 25 percent had dropped out during the first year, 43 percent within four years, and another 11 percent were still enrolled at the end of four years. He also found that at two-year colleges, 33 percent dropped out the first year, 38 percent received an associate degree within four years, and 2 percent were still enrolled. In this study, as in the earlier survey of those dropping out, Astin found that about 75 percent had done so *voluntarily.*

Most studies that surveyed students' reasons for leaving college have limited the number to a dozen or fewer, although students are often given the opportunity to mention others that applied to them. Other questionnaires include a fairly large number of reasons: Albino (1973) listed 65, Krebs and Liberty (1971) listed 36, Hackman and Dysinger (1970) listed 31, and Cope and Hewitt (1971) listed 20. A landmark national study conducted by Iffert in the early 1950s (U.S. Department of Health, Education, and Welfare 1957) listed 21 reasons for dropping out and 9 reasons for transferring to a different college. Students in the Iffert study could also include their other reasons on the questionnaire; these were tabulated as unique reasons, even though many of them were merely rewordings of those listed. In addition, Iffert asked students to express their degree of satisfaction with experiences related to college facilities, services, and so forth. Again, he allowed respondents to add factors of dissatisfaction.

Several studies have used factor analysis to arrive at basic reasons for students' dropping out. In such a study at the University of Texas, Krebs and Liberty (1971) identified 10 factors: low academic stimulation, institutional academic dependency, social isolation, masculinity conflicts, career uncertainty, marital-engagement problems, employment-financial problems, social gregariousness, low academic skills, and demographic adjustment. Three groups of dropout students were then compared on factor scores and found to differ significantly on 6 of the

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factors. Albino (1973) conducted a factor-analysis study in the College of Liberal Arts at the University of Texas and described 11 factors: personal-psychological problems, dissatisfaction with the academic situation, financial or employment problems, home-parental concerns, career-related concerns, poor academic skills or grades, health-related concerns, marital problems, dissatisfaction with residence, lack of time for extracurricular activities, and religious-philosophical concerns. Highly similar factor structures were found for men and women, although analysis of variance revealed 7 significant differences: dropout women scored higher than dropout men on personal-psychological concerns, poor academic skills or grades, dissatisfaction with residence, and lack of time for extracurricular activities; men scored higher than women on financial or employment problems, career-related concerns, and health-related concerns. As reported early in our discussion of classification, Cope and Hewitt (1971) found 7 types of reasons for dropping out in their factor analysis of self-reported problems accounting for withdrawal. Factors that accounted for 62 percent of the total variance were: social (20 percent of the variance), academic, family, religion, finance, fraternity-sorority membership, and discipline. The social and academic factors were especially distinct.

Iffert (U.S. Department of Health, Education, and Welfare 1957) purposely limited the reasons for student withdrawal listed on the questionnaire to those reflecting on the student rather than on the institution. However, the reasons that students added also pertained to personal problems rather than to deficiencies in the institution. On the college-experience satisfaction items given to both persisters and dropouts, many dropouts rated a number of services as very unsatisfactory, but the percentage of dropouts giving this rating was seldom as high as the percentage of persisters. This finding suggests that as a root cause of retention and attrition, the degree of personal willingness and ability to put up with dissatisfaction may be as important as the dissatisfaction itself. Of course, the attractiveness (or otherwise) of alternatives to school may be related to how much dissatisfaction students are willing to endure.

Iffert and Clarke (1965) later examined in greater depth 20 of the 147 institutions used in the earlier study; however, they did not attempt to make this sample of colleges representative of colleges nationally, as had been done previously. The study, which surveyed students who entered college in 1956-57 and 1957-58, examined reports by students of their willingness to stay, in hindsight, under changed circumstances. Students were asked if they would have remained had their most important reason for leaving been remedied, and most said yes. Among students who cited finances as the major reason for dropping out, an even higher percentage said they would have stayed if financial difficulties had been resolved.

The Minnesota State College System (Fenstemacher 1973) studied Minnesota residents at the six state colleges who enrolled as full-time students during the fall 1971 quarter but did not re-enroll for the winter 1972 quarter. Four of the 10 reasons listed on the questionnaire were rated as "very important" or "somewhat important" by an appreciable proportion of the students: insufficient financial resources (48 percent), unhappiness with the college experience (47 percent), and academic program not available (38 percent). For men with satisfactory grades, the most important reason for dropping out was a lack of financial resources; for men with unsatisfactory grades, finances ranked fourth behind low grades, unhappiness with the college experience, and disappointment with the academic program. For women, the three most important reasons, in the order of importance, were disappointment with academic program, lack of financial resources, and unhappiness with college. The students surveyed generally were satisfied with their educational experience. However, many expressed dissatisfaction with "quality of instruction" and "the teaching-learning process"—particularly in general-education courses—and the lack of opportunity to concentrate in a major field as freshmen.

The Minnesota study demonstrates the need to analyze self-report reasons for different student types within each specific dropout category. It also demonstrates the need to look for reasons *behind* the reasons. For example, the importance of insufficient finances as a reason for withdrawing was often related to the reluctance of students to apply for financial aid. Identifying student responses with particular students has helped to reduce misleading results. Cope and Hannah (1975) cite nine major studies that found consistent differences in reasons between men and women; Astin (1975c) also found such differences. Marriage was consistently the most important reason given by women, while boredom and dissatisfaction with the environment ranked highest for men. Financial problems ranked high for both groups, as did changes in goals and plans (especially career plans). Poor grades ranked high for men as a reported reason but not for women. Dissatisfaction with the environment, including dissatisfaction with requirements and regulations, ranked high for women, but not as high as for men. In times of war, military enlistment or conscription can become one of the top reasons for men to leave, according to Iffert's (U.S. Department of Health, Education, and Welfare 1957) study of those entering college in 1950. On the other hand, there was much publicity during the war in Vietnam about draft deferments serving as incentives for students to stay enrolled. Conceivably, this could have happened during the Korean conflict or World War II as well.

Comparing the reasons given by black students for dropping out to those given by whites, Astin (1975c) found major differences. Blacks more often gave financial and marriage reasons while whites cited boredom, dissatisfaction with requirements and regulations, and changes in career plans. More than whites, black students tended to check only one reason instead of many. Astin also compared reported reasons for dropping out between permanent dropouts and those who return. Stopouts cited illness, accident, and disciplinary reasons more often and marriage or dissatisfaction less often than those who dropped out permanently.

Studies at two-year community colleges show similar findings. Davis (1970) conducted in-depth interviews with dropouts in 1967 at three Florida community colleges. Reasons given for dropping out were finances, the irrelevancy of a college education, discouragement with meeting academic standards, marriage, health, and family problems.

In a more recent study, Thurston and Brainard (1973) studied students from several community-college campuses of the Metropolitan Junior College District of Kansas City who dropped out during the 1972-73 school year. Reasons for leaving included transfer to another institution, change of residence, employment, medical problems, marriage, and military obligations. In addition, many of the dropouts cited difficulties that conceivably could have been resolved by the college: conflicts between jobs and class schedule, financial problems, dissatisfaction with courses or instructors, academic and personal problems, and lack of counseling and academic advising.

Although it is important to try to find out why students drop out, it is not necessarily wise to accept wholeheartedly students' self-reported reasons for leaving school, as discussed in part I. Students may often give an incomplete, distorted, or erroneous picture of the pattern of reasons (and priorities among those reasons) for dropping out. They often rationalize in ways that make their reasons appear to be more socially acceptable and find ways to protect their egos. It is also possible that the actual reasons are so complex and intermingled that the respondents themselves are neither cognizant of nor fully understand why they dropped out—especially if they are asked at the time of withdrawal or shortly thereafter. In these cases, they may not have had adequate time to reflect systematically and carefully. Only a small number of studies address this issue, but the results are important. As reported earlier, a study in the early 1970s conducted throughout the Minnesota State College System (Fenstemacher 1973) found that insufficient finances as a reported reason for withdrawing was related to a reluctance to apply for financial assistance.

Also mentioned earlier, Davis's (1970) study of dropouts at three community colleges found that a sizable majority reported bad college experiences; they particularly criticized the college counseling services and lack of faculty interest. Through his in-depth counseling, however, Davis perceived that dropouts actually blamed themselves more than the college. It is unclear whether this type of response is unique to this college, unique to community-college students (for such reasons as a lack of academic self-confidence), or true at most colleges of all types. In short, no other studies in the literature examined such differences. Furthermore, only 18 percent of those dropping out had sought assistance from college personnel, a finding that coincides with the results of other research (Kesselman 1976; Hannah 1969b; Chickering and Hannah 1969). College personnel are generally the last people students talk to about dropping out—usually after the decision to drop out has already been made. Such findings either can imply a discrepancy between the students' needs and the assistance that college personnel are able to supply or they can indicate that such students have not been integrated into the campus life well enough to feel comfortable about approaching campus personnel with personal problems. Both views are consistent with our overall conceptual framework, and both may apply in various institutions.

The most clear-cut evidence suggesting the difficulties of interpreting self-reported reasons for attrition is found in a study conducted by Demos (1968) at Long Beach State College. Reasons given by students for dropping out were compared with reasons given by counselors who had interviewed the students beforehand. The study assumed that counselors would be able to "detect unconscious motivation and certain defense mechanisms utilized by the dropouts, and thus determine 'real' reasons for leaving the institution" (p. 681). It also assumed that the counselors' perception were not influenced by any personal biases or defenses. The majority of students in the study gave reasons consistent with those mentioned in the literature. In most cases, reasons were specific, reflected serious thought, and had been developed over the semester or over a period of several weeks. Students' reasons also tended to be self-oriented and, to a degree, imposed on the students by others—generally their families. Finally, about 10 percent of the students planning to drop out decided against it following an exit interview with a counselor, a figure that points to the important role such interviews may play in retention at some colleges.

The Demos (1968) study found that, after interviews with the students, counselors reported considerably different reasons for student withdrawal than were reported by the students themselves, who had emphasized financial problems, work needs, military service, and personal illness or illness in the family. Although the counselors felt that many students were citing finances merely because it was socially acceptable, they included this as an important reason for withdrawal, in addition to a lack of motivation, the difficulty of college work, personal or family illness, and personal, emotional or psychological problems. Neither group mentioned poor grades as an important cause for dropping out. These discrepancies between the reason attributed to student withdrawal by students and counselors suggest that college personnel concerned with dropouts should not rely completely on surface statements often given by students. Although research on this subject has not yet been conducted, it seems logical that responding to the underlying reasons reported by students rather than the expressed reasons could lead to improved retention rates. Demitroff (1974) also compared students' reported reasons for dropping out to those perceived by counselors, and the findings of this later study reinforce the conclusions derived from the Demos study.

Observations by outsiders can also be informative. Morrison (1973) asked chief administrators of two-year colleges across the country to identify, from a list of reasons commonly reported by students, the three reasons for disadvantaged students' dropping out of college that they considered important. Almost half of the administrators listed student financial problems, 39 percent listed inadequate emotional stability (or immaturity), 37 percent listed inadequate motivation, 35 percent listed inadequate institutional finance, 34 percent listed inadequate academic ability, and 28 percent listed inadequate institutional support of students.

But even these can sometimes be misleading because the real reason may be complex and an intervening (moderator) variable may mask the major contributing reason for dropping out.

In their summary report of a national survey entitled "What Works in Student Retention," Beal and Noel (1979) listed the most important factors influencing student retention as perceived by college officials at 858 colleges responding to their survey.

The top negative factors were:

- Inadequate academic advising
- Inadequate curricular offerings
- Conflict between class schedule and job
- Inadequate financial aid
- Inadequate counseling support systems
- Inadequate extracurricular offerings

The top positive factors were:

- Caring attitude of faculty and staff
- High quality of teaching
- Adequate financial aid
- Student involvement in campus life
- High quality of advising

Hidden reasons for dropping out, as discussed earlier, illustrate the importance of the Pantages and Creedon (1978) methodological suggestion that studies examining dropouts use a control group of persisting students. Pantages and Creedon also criticize attrition studies for focusing on only one or two variables at a time instead of examining the interaction of many variables operating simultaneously. This criticism is well taken because persistence or attrition *is* such a complex and multifaceted phenomenon. One way effectively to reduce the problem of controlling for confounding variables is to use longitudinal study designs involving collection of data about the same persons at different points in time. A combination of cross-sectional and longitudinal data for the same study would probably be the most desirable, if costs are not considered.

Also noted earlier, most attrition research is unavoidably ex post facto (uncontrolled independent variable)—rather than experimental. This is because (1) the criterion (independent) variable, college experience, cannot be manipulated in any experimental sense, and (2) the students (subjects) cannot be randomly assigned to different "treatment" groups. An exception to this, which can become more common as retention programs proliferate, is the experimental testing of different types of retention programs.

RETENTION AND ATTRITION CORRELATES

Many of the student, institution, and interaction correlates of retention and attrition explored here are potentially useful indicators of retention and attrition and the causes of retention and attrition. Effective collection and interpretation of institutional and program information for these variables can suggest possibilities for improving retention. The reliability and validity of the data-collection instruments and methods used to gather this information are very important. Reviews in such resource documents as Buros's *Ninth Mental Measurements Yearbook* (1979) can help one decide on the most valid and reliable instruments for particular indicator variables. Valid and reliable data-collection procedures and instruments can help ensure accurate and useful information. Similarly, multiple data sources and measures for the same variable (when they are feasible in terms of available financial, staff, and time resources) can improve overall validity and reliability with respect to that variable.

Validity is best subdivided into content validity, criterion-related validity, and construct validity (American Psychological Association 1966; Kerlinger 1973).[9] Content validity and criterion-related validity have been relatively well addressed; most researchers have been conscientious in their concern for what their indicators are trying to measure and for improving predictiveness. The most serious deficiency in previous attrition studies has been the failure to pay attention to construct validity, although the situation has been improving. Most of the research has been largely descriptive; rarely has it begun with a theory from which hypotheses can be operationalized and tested by data analysis. This is primarily because little genuine theorizing or model building has been done on attrition. Some recent studies, however, have begun to exhibit construct validity. An exemplary study of this kind has been the Tinto, Terenzini, and Pascarella sequence of research. Tinto (1975) produced a theoretical model that attempted to explain attrition in conceptual terms, not merely describe it in statistical terms. Pascarella and Terenzini (1977; 1979a; 1979b; in press; see also Terenzini and Pascarella 1977; in press) were able to capitalize on Tinto's efforts and produce research that integrated theory and empirical research and thus produce construct as well as content validity (see pages 46-47).

As discussed earlier, a common deficiency of many attrition studies that reduces validity and reliability is research design. Except for some of the larger studies, much research is descriptive and conducted on single, isolated institutions. It is difficult to generalize from such studies or to understand why retention or attrition occurred (which is necessary if retention is to be improved). Experimental and quasi-experimental designs of the sort described by Campbell and Stanley (1963) are rarely employed, for appropriate reasons already noted. However, an increased focus on developing special retention programs, and on testing such programs, should provide greater opportunity to use study designs that require random assignment of subjects to groups.

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[9] *Content validity* is the representativeness of a measuring instrument's content; *criterion-related validity* is determined by a measuring instrument's ability to predict some future outcome; and *construct validity* describes research that is based on a theory or aimed at testing a hypothesis.

Because of the tremendous diversity of attrition studies, the usefulness of this body of literature must be addressed in at least two parts. First, with regard to advancing the state of the art and of understanding the attrition phenomenon, two basic types of studies are most useful: (1) large-scale efforts involving longitudinal data on large samples of students and institutions, and (2) conceptual or theoretical studies, backed up by empirical research, of the sort already described in the content-validity discussion. Second, empirical studies involving single institutions or small numbers of relatively homogeneous institutions are usually not very useful outside of the immediate institution or group of institutions. Because of problems in comparability that are based on the deficiencies in theory, construct validity, and research design, one should be wary of expecting that findings from one institution can be duplicated or generalized to others. However, local studies can help to describe the problem to administrators in other institutions and help them find alternatives to solve their attrition problems. This is especially true if detailed differences between the two institutions, the validity and reliability of the instruments, and the appropriateness of the study design are carefully noted in interpreting the relevance of the study findings to one's own institution.

If careful consideration is given to the type of institution studied, to the design of the study, and to the manner in which the data were analyzed and interpreted, the pattern of similarities and discrepancies across the results of many local studies can be revealing and useful. This was the approach taken in the synthesis of the retention literature presented in this document, and the results of the many local studies cited have added much to the overall picture that we present. Furthermore, based on the comments of the several dozen educational practitioners and researchers who reviewed the field review version of this document, we have concluded that the picture presented may be a very useful one.

8

Implications for Practitioners and Researchers: An Overview

In this section we attempt to compile some generalizations from the preceding sections that are over and above those provided in part I. First, the needs of college administrators and others trying to respond to student retention problems and goals are addressed. Then follows a subsection specifically intended for those doing research on retention and attrition, although parts of it will be of interest to administrators concerned about the costs versus benefits of retention research and whether the research questions being promoted are ones that will add to the foundation for good practice in improving retention.

Improving Retention

The factors related to retention, based on the theoretical and empirical-study findings reported in the preceding sections, are summarized in part I. Most of this research has focused, and continues to focus, on student factors—as have college personnel concerned with retention and attrition. It is important to understand students' own perceptions of why they drop out or stay in college, and it is equally important to understand student characteristics related to those choices. But this understanding is primarily useful in terms of how student factors relate to institutional factors—over which most institutions have far more control. Too little research and administrative attention has been devoted to the complex pattern of *interactions* between student factors and institutional factors, and policy implied.

One way to improve retention is to direct recruitment efforts to students whom the institution is best equipped to serve and to change the institution so that it will better serve those students. In a declining pool of traditional college students, there may also be a need for program and institutional development that will serve additional groups of students as well.

The literature on theory and research suggests that there are also a number of general things that institutions can change on campus to improve retention. Among these are the following:

1. *Improve faculty-student interaction*—The studies of Pascarella and Terenzini reported earlier have demonstrated that the frequency and quality of faculty and student interaction can have a primary effect on student retention, and a number of studies suggest that well-designed advisory programs can make an important difference. One of the field reviewers for this document, Dr. Robert A. Levy of the University of Tennessee, has noted that (1) the dropout rate is very low among graduate students who have mentors to act as advocates for them, and (2) an "instrusive counseling" program "appears to have reduced attrition" from about 45 percent to about 5 percent since the early 1970s at the University of Nevada. Among others, Fisch (1978) has noted that faculty tend to see personal interaction with students as outside of their area of responsibility. Therefore, incentives are needed to encourage and reward such interaction between faculty members and students.
2. *Improve peer interactions*—As Chickering (1969; 1974) and others have demonstrated, on-campus residence is important to retention. Chickering discusses ways in which campus housing and its experiences can be improved to better serve student life, educational development, and retention. Numerous studies have shown that peers exert more influence over traditional-age college students than anyone else, so reaching student leaders, peer counseling, encouraging "significant other" peer friendships, and programs that promote voluntary and informal peer intellectual discussions and other interactions would be expected to improve student retention. A number of studies have also found that student involvement in extracurricular activities can be positively related to retention, another form of peer interaction. For example, Everett (1979) discovered that 79 percent of the persisters among undergraduate students at Pennsylvania State University participated in at least one extracurricular activity, compared to only 42 percent for dropouts. The percentages were 54 percent versus 23 percent for intramurals and sports clubs, 38 percent versus 14 percent for special-interest organizations, and 15 percent versus 1 percent for professional and honorary societies, respectively. On the other hand, other studies have found no such relationship; therefore, such factors as overinvolvement in extracurricular activities and campus expectations for extracurricular involvement can undoubtedly intervene.

3. *Be responsive to student complaints and expressed needs*—Baird (1976) has pointed out the negative effect of "brass tacks" on student satisfaction and retention, and dissatisfaction is a major reason given by students for dropping out or transferring to another institution.
4. *Provide many on-campus, part-time work opportunities*—Astin (1975c) found that part-time jobs on campus contribute to retention, even for freshmen. A number of single-institution studies, such as Everett's (1979) at Pennsylvania State University, support this finding. Perhaps such jobs provide additional involvement in campus life, although this remains to be researched, and further research might suggest that the type of job on campus may also be important.
5. *Present a meaningful and accurate picture of the institution*—As Lenning and Cooper (1978) have pointed out, presenting a misleading picture of the institution to prospective students can have serious negative effects on retention. Furthermore, dropouts will share their disillusionment with relatives or friends in high school, and this, in turn, can negatively effect future recruitment. Lenning and Cooper, as well as a number of others to whom they refer, have identified the kind of information prospective students need to choose an institution appropriate for them. This suggests that well-designed, extended orientation programs have a positive effect on retention. However, even though Beal and Noel (1979) found that orientation programs aimed at improving retention were reported to have a significant positive impact on retention at a number of colleges and universities, the following statement from Osinske (1979) cautions that we should not expect too much from them:

   > Orientation directors, then, must establish goals based on student expectations and needs, determine ways to evaluate these goals, and be very wary of leaping on the retention bandwagon and accepting responsibility for efforts which must be shared by the entire university community. A college education takes at least two to four years and often more. In this sequence orientation can be viewed as the table of contents, the preview, or the introductory chapter to the experience. To expect more denies a great deal of what we know about student development and places orientation directors in the untenable position of making promises they can't keep. A systems approach with appropriate and realistic goals should help avoid this pitfall. [P. 2]

6. *Improve instruction and academic programs*—Astin (1975c) found that involvement in honors programs, foreign study programs, and credit-by-examination tend to increase student retention. Similarly, according to Beal and Noel (1979), one of the most effective ways of influencing retention at many institutions is through the implementation of academic support (learning center) programs. The type of academic experience inside the classroom—

including the teaching style, practices, and methods used in relation to student characteristics and learning styles—can also affect student learning, hence retention (Cross 1976; Domino 1970; Schalock 1976).

Beal and Noel (forthcoming) identify different types of special retention programs that were found to significantly affect retention. It is easy to become excited about the potential benefits without relating expected benefits to the costs, however. Such programs can be very expensive and require a heavy investment of physical resources and staff time and effort. Furthermore, some of the more expensive approaches may be no more effective than an inexpensive one. A small pilot run and an assessment of costs as well as benefits is advisable before such a program is implemented.

Beal and Noel (forthcoming) also note that special narrowly focused retention programs cannot take the place of institutionwide, multifaceted systems efforts that involve everyone on campus. And as Moore (1976) has pointed out, the attitudes of everyone on campus are especially important for disadvantaged, developmental students. A lack of appreciation for such students, or a negative attitude toward them around campus, he states, can have a catastrophic effect on their success in college.

How can one estimate whether or not a special retention effort is worth the cost? Such an assessment is so specific to the local situation (resources available, amount of need for retention improvement, staff interests, attitudes of faculty and students, the political environment, and so on) that no general guidelines can be given. However, a matrix similar to that shown in figure 9 can help to stimulate local thinking about this matter.

Type of Difficulties

	All students	With no difficulties	Course/university related difficulties	Student, personal, family related difficulties
Kind of Support	No special support	Student will survive	Student will drop out	Student will drop out
	Relevant support	Will survive *but* money wasted	Student will survive at extra cost	Student will drop out *and* money will be wasted
	Irrelevant support	Will survive *but* money wasted	Student will drop out *and* money will be wasted	Student will drop out *and* money will be wasted

Fig. 9. Institutional support versus student difficulties matrix. [Reprinted from Kenneth Abrahamsson, *Adult Learners in Post-Secondary Study Programmes: Risk Students or Resource Students.* Information on Research and Development for Higher Education, Report no. 1979:8 (Stockholm: National Swedish Board of Universities and Colleges, 1979).]

In conclusion, a word should be said about the negative value that is often automatically placed on withdrawing from college. As stated in the introduction, colleges do many students a disfavor when they view, and are perceived to view, dropping out as universally undesirable. Timmons (1977a) found that both male and female dropouts (which include stopouts) are more dissatisfied with their lives than are persisters; for such students, withdrawal can be a positive step toward "identity formation" (p. 159), establishing "their own priorities" (p. 159), and adapting to meet their "own developmental needs" (p. 172). Indeed, these are only a few of many possible reasons why it may be desirable for students to drop out or stop out of college. (Haagen 1977). It is not necessarily all "wastage," a term commonly used in Britain for "attrition." And in cases where this is true, as well as inevitable, it is probably better if the student drops out sooner than later.

Studying Retention: Administrative and More Basic Research

A desirable trend followed by increasing numbers of colleges is to have trained interviewers conduct student exit interviews. In spite of the abundance of studies of student-reported reasons for dropping out and the potential problems with student self-report in this area, it is still important to examine students' own perceptions of why they leave college. Exit interviews provide a better interpretation of stated reasons, which questionnaires do not allow, though questionnaires can later serve as useful tools for examining why students drop out from the perspective of hindsight. In fact, changes in former students' perceptions and situations over a year's (or several years') time could be quite revealing.

In addition, exit interviews can accomplish another potentially important task—demonstrating the college's concern for dropouts and their needs as individuals. In fact it is possible that such interviews can also have significant positive effects on retention (serving as a direct part of a retention-improvement program). As reported earlier, at Long Beach State College during the late sixties (Demos 1968), about 10 percent of the students planning to drop out decided not to withdraw as a result of the exit interview. Of course, if they had been reached earlier and helped to work out their problems, even more of those dropout-prone students might have persisted. However, here is where predictive research can be helpful, in spite of its admitted lack of predictive accuracy and the complex and multifaceted nature of attrition. Predictive research in terms of retention percentage trends and predictions (for the institution as a whole and programs having enrollment ceilings) can also be useful, as demonstrated by Newlon and Gaither (in press).

The balancing of costs to benefits in administrative research on retention is an area that should be of as much concern to campus officials as is the expected costs-versus-benefits ratio of special retention programs. Only by getting the prospective users of the retention data involved in discussions of need versus costs—and projecting costs and expected benefits into concrete dollar-equivalent terms—can the best possible decisions be made about the direction of retention research. Even then it will not often be easy to make such decisions, as demonstrated by Thompson (1979) in the analogous area of market research. He tried to apply a six-step evaluative process called *preposterior analysis,* described by Newman (1971) as follows, to evaluating a market research proposal:

1. List the possible research outcomes and calcuate their marginal probabilities.
2. Assume, in turn that each of the research outcomes has been obtained. For each research outcome:
   a. Revise the prior probabilities.
   b. Calculate the expected payoff of each course of action under consideration and select the act with the highest expected payoff.
   c. Multiply the expected payoff of the best course of action by the marginal probability of the research outcome.
3. Sum the products of step 2c (taken for each research outcome) to get the expected payoff of the strategy that includes ordering research before taking final action.
4. Subtract the cost of the research to get the expected net payoff of the strategy.
5. Compare the expected net payoff of the strategy that includes research with the expected payoff of the strategy of choosing among the alternatives without research.
6. Choose the strategy that maximizes expected net payoff (assuming the use of the decision criterion of maximum expected value). [P. 24]

The Newman process, described above, means that estimates will be made of all dollar costs of conducting the research, and of the probable dollar benefits, for example, in terms of impacts on retention program efficiencies and effectiveness. The costs versus benefits must be calculated separately for each alternative way of conducting the research that has been proposed.

Turning to those who are conducting more basic research on student retention, this document has demonstrated many important areas where little research has been done. Research to test and further the development of retention theory has only recently started to receive much attention. Pascarella and Terenzini have done much to validate important theoretical constructs proposed by Tinto and by Spady, but their research only involved students at one institution, Syracuse University. Studies need to be conducted at various other institutions of all types to see if their findings can be generalized.

Most retention studies thus far have focused either on student characteristics or on institutional characteristics and programs. Much well-designed research that focuses on the interaction between student factors and institutional factors is needed. As demonstrated throughout part II of this document, this is where retention starts to make the most consistent and logical sense.

Most retention research thus far has also focused on "on-time" or "sometime" graduation of students who began at a college. Even within the on-time and sometime categories of retention and attrition, important subcategories have received little research attention. For the "course or term completion" category, only a few studies were found in the retention literature; and no empirical studies of "personal goal attainment" as related to retention and attrition were found. Some attention has been given to time of attrition, but not in specific enough terms (for example, when during the freshman, sophomore, and upperclass years does attrition for different reasons occur?) The same is true of volition as related to time of attrition and to attrition factors. Factors distinguishing very specific combination-types of retention and attrition (combinations of the categorization across levels in figure 8), such as those in the discriminant analysis studies of Rose and Elton (1966) and Endo and Harpel (1979), have largely been lacking in the literature. So have studies relating to some factors known to be important to retention—such as Willner's (1979) study at Kingsborough Community College, which found that the *intention to persist* at the college was significantly related to high-school average, curriculum of the college, certainty of occupational objective, parents' attitude toward the college, reason for going to college, and their rating of the college as a place to get an education. Another example of an important topic that has received little attention is how factors related to attrition are different for those entering as transfer students compared to those entering as new freshmen. For example, Newlon and Gaither (in press) found a number of such differences at California State University, Northridge. Still another example of an important topic that has received little attention is Hammer and Smith's (1979) study of conditions under which dropouts can continue their studies. Although the study involved an exceedingly small sample of an open university in Canada (not a very common type of institution, and one in a different cultural environment than the United States), their results are stimulating. They reportedly found six policy areas that may be important to consider for bringing students back to college: pacing and timeline restrictions on student progress, range of advanced course offerings, credit-noncredit options, course improvements, stop out students, and open admissions.

A final problem that should be mentioned concerns the absence of research in the literature on the retention of special groups of students. For example, some studies on minority students have been done, but not very many; at best, they cover only some areas of concern (for example, the relationship of financial aid to retention). Furthermore, almost all of these studies focused on blacks. One exception, Astin (1973b), demonstrates the importance of focusing on different minority groups separately. Another area in which studies are entirely lacking is that of adults. As pointed out by one of the reviewers of this document, Elinor Greenberg, older students have a distinct need for primary institutional support prior to enrollment, rather than after enrollment, as is needed by other students. It should also be mentioned that "older students" is not a homogeneous group, but undoubtedly consists of a number of distinctive subgroups (retirees, homemakers, those having jobs replaced by machines), each having different needs and retention rates.

One obstacle in retention research has been that the same kinds of research continue to receive researchers' time and energy far after it has become clear that more replication and generalization studies are unnecessary. A good example of this is the area of students' reported reasons for withdrawing. Based on the extensive synthesis of the theoretical and empirical literature reported here, many other research objectives within retention and attrition deserve this attention.

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